

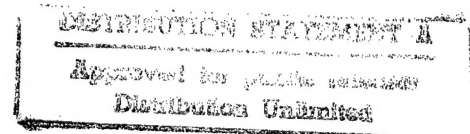
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9 February 1984

USSR Report

CONSTRUCTION AND RELATED INDUSTRIES



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USSR REPORT

CONSTRUCTION AND RELATED INDUSTRIES

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CONSTRUCTION PLANNING AND ECONOMICS

MINISTER ON AUTOMATED MANAGEMENT SYSTEMS IN ASSEMBLY WORK

Moscow NA STROYKAKH ROSSII in Russian No 11, Nov 83 pp 2-7

[Interview with K. Lipodat, deputy minister, USSR Ministry of Installation and Special Construction Work, conducted by special correspondent Ye. Braynin: "Improving the Management of Installation and Special Work: Experience and Problems"]

[Text] The decisions of the 26th Party Congress attribute an important place in the acceleration of scientific-technical progress at the current stage of development of the economic system to problems of improving planning and management of building production. The continuous increase in volume and acceleration of the pace of construction, the increased complexity of the facilities being introduced, the increased intensity of specialization and cooperation of installation organizations and industrial enterprises of the USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction Work], and the development and increased complexity of ties between all participants in the building process—all this has led to a sharp increase in the volume of processed information necessary for effective management. The widespread application of economic-mathematical methods, electronic computers, modern means of communication and organizational technology and the creation of automated management systems on their basis all play an important role in solving this complex problem. At the USSR Minmontazhspetsstroy its solution has been greatly facilitated by the development, introduction and industrial operation of problem complexes for automated information systems, as well as subsystems which are part of ASU-Montazh [Automated Management Systems-Installation]. This [system] includes the management of steel building structure production, the management of the process of manufacturing and installing light metallic structures, the management of material-technical supply, the management of its own capital construction, cost accounting and analysis of economic activity, planning, personnel

accounting and analysis, etc. Within the framework of the ASU, base trusts and industrial trusts and enterprises are working out and putting into operation problems of engineering preparation for production, technical-economic planning, accounting and analysis of economic activity, etc. The interview presented below, which was conducted by our special correspondent Ye. Braynin with Deputy Minister K. Lipodat, as well as selected articles, tell of this experience acquired at the USSR Minmontazhspetsstroy in increasing the effectiveness of management of installation and special construction work based on improvement of the economic mechanism and the introduction of ASU-Montazh and SAPR [Automated Planning System].

[Question] Konstantin Kondrat'yevich, at the current stage the effectiveness of construction-installation production is predetermined to a significant degree by the quality of the management systems. In the 70's, many people associated the increase in effectiveness and quality of construction management with the application of economic-mathematical methods and computers for making various computations, as well as with the rational organization of information gathering, storage and processing. However, the achievements of scientific-technical progress in this field have at the same time also given rise to certain overstatement of the real capabilities of computer technology. Thus, even though a large number of informational problems in construction were solved with the aid of computers, which primarily automated functions of control, accounting, reporting, and individual problems in planning and management, many users as well as [systems] developers agree that their actual effectiveness as compared with expenditures for ASU is lower than anticipated. How do you evaluate the results of the work implemented by your ministry in this important direction?

[Answer] Special attention has been given recently at the USSR Minmontazhspetsstroy to questions of the effectiveness of introduction of tasks and subsystems and to the cost effectiveness of expenditures directed toward the creation of ASU. This is understandable. After all, the overall expenditures for the development of automated management systems and automated planning systems and their experimental and experimental-industrial operation in ministry organizations comprised, for example, 58 million rubles in the last decade. Most of these expenditures went toward the acquisition of computers, and the rest--towards task development and application. On the whole for the period 1971-1980, 33 ASU were developed and introduced at the USSR Minmontazhspetsstroy. This includes a sectorial ASU for the central apparatus, 4 ASU by republic ministries, and 27 ASU by trusts and enterprises. At the very first stage, we really were engaged primarily in building up individual tasks for automation of control and accounting functions. However, already by the 10th Five-Year Period we went from the development of local tasks to interrelated complexes and subsystems. In connection with this, the portion of plan and analytical tasks increased.

[Question] Thus, the USSR Minmontazhspetsstroy has essentially chosen the evolutionary path of development and improvement of the existing systems, gradually going from mechanization and automation of control and accounting functions

to optimizational management. Specifically, what subsystems of the sectorial ASU are currently functioning within your ministry, what problems do they solve and what practical effect does this yield?

[Answer] The 1st and 2nd orders of the sectorial ASU function at the level of the ministry's central apparatus. Over 200 problems are solved within their make-up. These problems encompass the functions of the main subdivisions-- GlavPEU [Economic Planning Main Administration], GPRU [Production Management Main Administration], Glavsnab [Supply Main Administration], GUKS [Capital Construction Main Administration], the bookkeeping and accounting administration, the personnel and educational institutions main administration, and others. (By the way, there are analogous tasks for the ASU of the UkSSR, KazSSR, BSSR and UzSSR minmontazhspestry). Of these, we must isolate first of all the subsystem for management of steel building structures production. It encompasses nine glavks [main administrations], an all-union association, four republic ministries, three republic administrations, and over 200 enterprises, shops and trusts supplying metallic building structures. The application of computer technology has made it possible for us to more effectively implement management of the course of their manufacture and delivery to the installation sites of all facilities under construction, to control the delivery of metal rolled stock to manufacturing enterprises and its movement at warehouses, and to monitor the fulfillment of the plan schedule for installation of metallic and reinforced concrete structures.

Our main computer information center presents such analytical information to the most varied management levels, differentially and in the most varied segments, in overall or detailed form, and with consideration of its directionality to the consumer. This allows the users of the issued information to make more efficient and better substantiated decisions. Today the users have acquired the capacity for dialogue exchange of information under conditions of data teleprocessing. In the future, this must become the basic form of information processing.

Within the framework of another analogous subsystem--the management of the process of manufacture and installation of light metallic structures--problems of accounting, control and analysis of organizational activity are being solved, as well as those of planning the needs of metal rolled stock and other material resources for manufacturing structures.

As a result of solving problems within the subsystem of accounting and analysis of economic activity, a balance is formulated in the main administrations, as well as in the ministry as a whole. Accounting has improved in quality, and bookkeeping and reporting operations have become less labor consumptive. The functioning of the subsystem for management of material-technical supply has made it possible to go to a more effective application of resources.

Based on solving problems in technical-economic planning with the aid of computers, accounting is performed on the fulfillment of the plan for contract work and production of industrial products and of the labor plan. Analytical tables are computed for the most important indicators of basic economic activity. Computers are used in formulating the annual plan in the subsystem of [the ministry's] own capital construction management, beginning with preparation of a plan project and ending with the stage of its correction.

On the whole, the solution of problems in OASU [Sectorial Automated Management Systems] facilitates an increase in the level of the sector's technical-economic work indicators, the adherence to directive times for operational introduction of facilities, an increase in the quality of planning contract work and material-technical provision, a more rational application of material resources, a reduction in above-norm reserves, etc. Moreover, I would also add to these outcomes of [ASU] introduction the important fact that, thanks to the operational introduction of our sectorial system, many workers within the ministry's management apparatus have been freed to a significant degree from the routine work associated with research and preparation of reports, summaries and information on the course of production, its level of provision with material resources, etc.

[Question] In summarizing the 10-year work by the USSR Minmontazhspetsstroy on the introduction of computer technology, you have spoken, Konstantin Konrat'yevich, primarily of the effect of solving informational problems for the central apparatus of the ministry. How are matters at the level of the construction-installation and industrial trusts and enterprises? What tasks or complexes of tasks have found widespread application there?

[Answer] As I have already said, around 30 ASU have been created for that level. Our conception of the development and introduction of ASU by trusts and enterprises is based on planning systems for base organizations. This has made it possible to ensure typization of project work according to the basic directions of activity of the USSR Minmontazhspetsstroy trusts and enterprises and to reduce the cost of developed systems due to repeated application. Today it is specifically in this direction of utilizing computers and economic-mathematical methods that we have achieved the greatest coverage in automating management functions.

Within the make-up of the ASU, the trust works out for the base organizations the problems and complexes of problems for subsystems in engineering preparation for production, technical-economic planning, operative management of contractor activity, and accounting and analysis of economic activity. Thus, at the Glavmontazhavtomatika [Installation of Means of Automation Main Administration]-Sevzapmontazhavtomatika [Installation of Means of Automation for Northern and Western Regions] base trust, an automated system of preparation for production (ASPP) has been created and is currently in industrial operation, encompassing practically all the major projects. Machine documents of the work production project are widely used in all the installation administrations of the trust. At the present time, preliminary measures are being implemented for the introduction of ASPP at other trusts within Glavmontazhavtomatika.

The effectiveness of this direction in computer application is evident and means that it has become possible to encompass practically all facilities for installation and adjustment with PPR [work production projects] without increasing the number of production preparation groups. The quality of installation projects is significantly improving, defects in installation production are declining, and materials and installation products are being saved.

Moreover, Sevzapmontazhavtomatika, with the aid of the ES-1022 computer, is implementing the distribution of basic annual plan technical-economic indicators by trust subsections, as well as the quarterly breakdown of the annual plan for each administration. The solution of problems makes it possible to obtain multi-variant decisions which provide the management apparatus with the necessary materials for analysis and selection of the plan variant closest to the optimal using these indicators.

Other organizations within the ministry are also engaged in the process of automating the preparation of PPR. For example, the GPI [State Planning Institute] Proyektpromventilyatsiya has developed and is introducing a complex of programs on the formulation of PPR at the Promventilyatsiya Trust. The following machine documents are being compiled on the basis of a technological model of work: an optimized plan-schedule, calculation of labor expenditures, an intake-limit chart, an estimate, and a requisition for the delivery of ventilation products and equipment.

The formulation of a calendar plan of work with the aid of the computer has made it possible to more effectively conduct preparation for production and the issuance of monthly assignments to work brigades in accordance with the readiness of the work front and the most rational installation technology. As a result, the time of organizational breaks in the installer work brigades has been reduced, their labor has become more productive, and it has become possible to predict work for several months ahead (as was the case, for example, in the construction of the Olympic television and radio complex).

The subsystem of accounting and analysis of economic activity developed by the Kishinev KVTs [Coordination-Computer Center] of the Soyuzorgsantekhmontazh Trust has passed broad practical verification in the Glavsantekhmontazh [Production of Sanitary Engineering Work Main Administration] trusts and has been recommended by the ASU section of the USSR Minmontazhspetsstroy Scientific-Technical Soviet for introduction at all trusts within the ministry. The solution of problems by this subsystem has made it possible to replace the currently operating log-order form of accounting, based on the application of manual labor, with the more progressive tabular-automated form. With its help, accounts are kept on the fixed capital, production reserves, labor and wages, movement of monetary funds, expenditures for production, accounting and realization of financial results, accounting of funds, reserves and deductions, formulation of data on monthly and periodic reporting, analysis of production-economic activity, and accounting and financing of capital investments.

On the basis of the ASU, the base trusts within the ministry also plan individual tasks which yield an effect immediately after their introduction. Thus, the experience of using computers in 36 trusts for the compilation and computation of labor expenditure and wage calculations demonstrated the possibility of reducing the total expenditures to 1/3-1/4 as much with their implementation yielded 25,000 rubles in economic effect at one trust. The ministry's section on the economics of the scientific-technical soviet examined the experience of introducing this problem complex, implemented by the Labor and Wage Administration and the Central Standard-Research Bureau of the USSR Minmontazhspetsstroy, and recommended its broader introduction.

Along with the development of ASU for construction-installation trusts, base ASU are being created by industrial trusts. For example, ASUs are in industrial operation at the Elektromontazhkonstruktsiya and Santekhdetal' Trusts. They solve many tens of problems, particularly those of computing equipment load and need for work force, as well as annual need for material resources, analysis of plan fulfillment by the trust's plants, compilation of reports on the shortage of product sets, intra-trust cooperation and materials, summary reports, etc. Moreover, problems in optimal planning of production are being introduced (by plant per month), computer calculations of annual production capacity of enterprises, etc. The application of these ASUs makes it possible to perform a timely evaluation of equipment processing capacity, to determine its shortage and to take measures for eliminating the "narrow" points, as well as to ensure plan fulfillment on the whole.

The solution of problems in material-technical supply has allowed supply workers to be engaged in their main and direct responsibility of realizing capital and operative provision, and not to be distracted, as before, by a report writing campaign for a month. Today this is done by computer with great speed, issuing around 3,000 sheets of such computations. As a result, the level of material-technical supply has increased, above-norm reserves of materials have been reduced, and their application has improved.

Insignificant volumes of work are still being performed at enterprises in the field of ASU introduction. These are primarily concentrated on the creation of base ASUP [Automated Enterprise Management System] at the Belgorodskiy Metallic Structures Plant and the Voronezh Aluminum Structures Plant.

[Question] The experience of the development and industrial application of problems and subsystems of ASU-Montazh which you have related testifies to their effectiveness. The question naturally arises: are you satisfied with everything in the work on introduction of computer technology? What problems are currently facing the ministry in connection with the further development of work on ASU?

[Answer] On the one hand, it seems that much has been done, a definite foundation has been laid for the broad application of computers and economic-mathematical methods in the ministry's organizations, a technical base for ASU has been created, collectives of specialists have been formed on the development, introduction and industrial application of problems and subsystems, the mastery of small computers has begun... At the present time, tens of different types of computers are operating within the organizations of the USSR Min-montazhspetsstroy. Half of these are ES [Unified System] computers. On the whole throughout the ministry for the period 1981-1982 their application has improved. Their useful operating time has increased and computer idle time has declined. The average daily general purpose computer load has increased. In 1982 it comprised 10 hours, with consideration for the introduction of new computers.

At the same time, the organization of work on the creation of ASU and the introduction of computer technology at the ministry has a number of shortcomings. First of all, many main administrations, administrations, and our republic

ministries are devoting insufficient attention to the resolution of these questions. This has a negative effect on the effectiveness of computer technology application and its work load in individual organizations of Glavsantekhmontazh, Glavpromventilyatsiya [Installation of Industrial Ventilation, Air Conditioning and Pneumatic Carriers Main Administration], and others. Moreover, the developing institutes have not yet achieved significant cost reduction in the systems and in their planning times.

An analysis of the experience which we have accumulated has allowed us to determine the subsequent directions for increasing the quality of the created systems and for reducing their project cost. Thus, the experience in the development of standard project decisions in the all-systems and functional part of ASU by the base trusts and enterprises has shown that under the conditions of our ministry (when there are trusts and enterprises unified into groups of different specializations) such an approach is the most rational. We intend to intensify it not only on the part of the functional building of individual base ASUs, but also in terms of reworking at the level of standard solutions to questions of information processing technology for individual classes of problems, program, informational and technical systems provision.

The comprehensive target program of work on solving the scientific-technical problem 0.15 ("To Develop and Introduce ASU and SAPR in the System of USSR Minmontazhspetsstroy for the Period 1981-1985 and to 1990") provides not only for a significant increase in the influence of economic-mathematical methods, means of computer technology and communications toward the qualitative implementation of such processes as the gathering, transfer, processing and retrieval of information, but also the more rational adoption of plan and management decisions due to greater availability of information by the management apparatus. At all levels of ASU-Montazh there is provision for a significant increase in complexity and greater coordination of the information being processed within a single level as well as between levels.

The first experience in dialogue information exchange under conditions of teleprocessing in the presence of corresponding technical means, as well as language means of man's means of contact with the machine has allowed designers at all levels of ASU-Montazh to set the goal of creating greater capacities for work with computers for workers within the management apparatus in an interactive regime and in solving problems not only of accounting and control, but also those dealing with planning and analysis.

The realization of this comprehensive target program will ensure the further development and improvement of all functioning ASUs and the planning and creation of new ones. For example, an ASU will be developed and introduced for the all-union association "Soyuzspetslegkonstruktsiya".

[Question] Konstantin Kondrat'yevich, in the comprehensive program, as you have indicated, we are speaking of creating not only an ASU, but also a SAPR. What direction will the development of automated planning systems take in your ministry?

[Answer] Work on the creation of automated planning systems has undergone considerable development in the USSR Minmontazhspetsstroy even in the 10th Five-Year Period. In particular, a SAPR for electrical power supply and electrical equipment in industrial buildings is being developed. Its introduction will reduce the planning time by 15-20 percent and will yield a 3-5 percent savings in materials and equipment. Work is being performed at the Giproneftemontazh Institute on the creation of an automated system for the development of detailed pipeline drawings (ASKTD), which will provide a 2.5-time increase in the labor productivity of designers and 2/3 of the cost of project planning work.

At the present time, SAPR are being created in practically all the scientific-research, project-technological and design institutes of the ministry and are one of the most promising directions in the application of electronic computer technology.

Moreover, improvement of the system of engineering preparation for production opens new possibilities for increasing effectiveness in the sphere of project design work and installation of facilities which were impossible before--in particular, the possibility of informational juncture of automated planning systems with ASU by the trusts. The first experience in such juncture of project planning and installation tasks, implemented by the GPI Proyektpromventilyatsiya, promises great prospects in the work of increasing the industrialization of the subsystem of preparation for production, improving its quality, and increasing the coverage of PPR to facilities under construction. This is because at the planning stage, along with the output of computer estimates, there is the possibility of compiling specifications, reports on material needs, set compilation information and other initial data for formulating organizational-technological models for installation of facilities. All this will make it possible to bring the development of PPR to a higher qualitative level.

In accordance with the resolution by the CPSU Central Committee and the USSR Soviet of Ministers, "On Measures for the Further Improvement of Project-Estimate Work" and the directives of the USSR Gosstroy Glavstroynauka [USSR State Committee for Construction Affairs, Scientific Research Work and Introduction of New Technology Main Administration], the target subprogram which is part of the comprehensive program provides for the significant development of work on SAPR in project planning organizations of the ministry. In particular, the creation of 12 systems of automated planning in our ministry [is planned]. This will include conclusion of planning of the 2nd phase of SAPR-PEU, which will make it possible to significantly increase the volume of project planning documentation turned out by computer, to more fully automate the technological planning process, and will ensure achievement of informational compatibility of the SAPR-PEU with the ASU of trusts. The degree of automation for project planning work will reach 15-20 percent of the overall volume.

The comprehensive program provides for a significant increase in the capacity of existing computer centers, as well as the creation of new ones. In the years 1981-1985 the operational introduction of general purpose computer

complexes with capacity of 3,710,000 operations per second is planned. This presents the problem of not only creating primarily interconnected informational computer centers, but of uniting all the informational computer centers into a single network. At the present time, the formulation of technical, organizational and legal questions regarding the creation of an informational computer center network has already begun. We believe such a formulation of the question is promising for our ministry.

Along with general purpose computers, the application of mini-computers will also expand significantly, particularly in terms of realization of the sub-program on SAPR, as well as in connection with the removal of keypunch machines from production.

[Question] What are the prospects for the further development of the ASU-Montazh system and what problems face your ministry in this connection?

[Answer] For the first time in our ministry, all the work associated with improving construction management based on economic-mathematical methods and computers has been isolated into a single problem.

The resolution of the CPSU Central Committee and the USSR Soviet of Ministers, "On Improving Planning and Intensifying the Effect of the Economic Mechanism on Increasing Production Effectiveness and Work Quality", gives an important place to tasks of ASU development for the near future. With consideration for the realization of these requirements and experience in creating the ASU, the ministry plans to begin the transition in the current five-year period from an ASU which realizes individual functions and management tasks to integrated systems which ensure complex processing of information for all types of activity of the organization or enterprise, with subsequent tie-in of the ASU for various levels of management. Moreover, the relative share of plan and analytical computations will increase within ASU-Montazh, teleprocessing will be more broadly mastered, as well as request-response and dialogue operations with the application of video terminal devices. In the future, the most effective perfected tasks based on standard ASU will be widely implemented for base trusts and enterprises.

In accordance with the comprehensive program, the further development of ASU-Montazh will be aimed primarily at solving the most important problems of long-range and current planning, improving plan quality based on the scientifically substantiated coordination of plans for capital investments with financial, labor and material-technical resources and with the capacities of construction-installation organizations, and ensuring compatibility of plan task complexes at all levels of planning within the ministry. A broad spectrum of scientific-research work is arising dealing with improvement of the balance method of planning, increasing the complexity of plan computations, solving plan standardization problems with the application of economic-mathematical optimization models, prediction and multi-factor analysis, and ensuring information exchange on machine storage devices with the ASPR of the USSR Gosplan.

Along with the work on improving planning, work on expanding the capacities of the operative management subsystem at the highest level--the GPRU and all the

production main administrations--will also undergo new qualitative development. This will provide a real help to the ministry's management in analyzing the course of construction on the most important sites in the national economic plan and the timely adoption of measures for eliminating delays in the course of construction-installation work. Considerable attention will be devoted at ASU-Montazh to improving the normative base for planning and management of installation production on the basis of creating an automated system of standards.

The ASUs of republic ministries (UkSSR, BSSR, UzSSR, KazSSR) will undergo further development on the basis of a unified technological work project with standard project design decisions. In accordance with the coordinating plan, the development of individual subsystems is distributed between all the developers of OASU of the union republics. This is facilitated by the fact that at the present time there are already sufficiently mature designer collectives in the republics. To make allowances for the individual peculiarities of each republic, the adaptation of unified project decisions will be implemented in the other republics. This approach will make it possible to reduce expenditures for planning by eliminating duplication of effort.

In conclusion I would like to pause on a number of questions whose solution will determine the further development of ASU not only at the USSR Minmontazhspeksstroy, but also at other construction ministries and departments and in the construction sector as a whole. First of all, the creation of an ASU is implemented apart from work on improving the organizational structures and economic methods of administration. The overall effect obtained from improving the system of construction production management would be more significant if [these questions] were solved in complex. This, in turn, requires an ordering of the organizational structures of the ministries and departments. Evidently, the time has come for creating within the ministries a functional administration (main administration) which would unite all management components: the economic mechanism, the organizational structures, ASU, computers, organizational technology, and communications technology.

As a rule, the construction ministries are presently developing closed informational systems and planning systems which do not provide for information exchange on machine storage devices between the computer centers of ministries of contractors, subcontractors, clients, and the USSR Gosplan. Consequently, the question of creating a unified system of construction planning should become the order of the day. This system should be able to consider the objective capacities of all participants in the construction process and to obtain within the framework of the construction sector plans which are balanced with the capacities of construction ministries and with the financial and material resources. This, of course, is a complex task whose solution requires the coordinated effort of ministry plan computation systems developers at the USSR Gosstroy and the USSR Gosplan.

The creation of a unified informational system in construction should also be approached analogously. This system would provide all participants in the construction process with identical information necessary for operative control over the course of construction and for making decisions in the case of any arising deviations. This will make it possible to concentrate efforts on projects which are underway and on other particularly important facilities.

Finally, it is necessary to resolve the questions of financing the industrial application of tasks, as well as the centralized financing of fundamental research on the creation of ASU.

The solution of all these difficult problems will make it possible to significantly increase the effectiveness of utilizing capital investments for the creation of ASUs in construction.

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CONSTRUCTION PLANNING AND ECONOMICS

CONSTRUCTION INDUSTRY CRITICIZED FOR UNDERFULFILLING PLAN

Moscow PARTIYNAYA ZHIZN' in Russian No 17, Sep 83 pp 23-26

[Editorial: "Attention of the Party--To the Construction Projects of the Five-Year Plan"]

[Text] Construction workers have quite an important role to play in carrying out the program for our country's economic and social development adopted by the 26th CPSU Congress. It is through their efforts that the productive capital of the economy is augmented, existing enterprises undergo retooling and reconstruction, the housing stock and cultural and consumer service facilities are built and renewed, and consequently, that tasks are performed to further increase production efficiency and prosperity of the people.

The builders have a serious test to take this year. The November (1982) and June (1983) Plenums of the CPSU Central Committee translated the decisions of the 26th party congress into specific terms concerning the needs for economic build-up and ideological work, and they equipped party organizations with a specific program of practical action.

Various aspects of improvement of the situation in capital construction and of carrying out the plan for this year were discussed at a conference held recently in the headquarters of the CPSU Central Committee. It was noted that favorable trends have been outlined this year in the organization of capital construction. In the first half of the year 10 percent more fixed capital was activated thanks to state capital investments than during the same period of last year. There was also an increase in the volume of contract work. The task now is not only to reinforce the favorable shifts in the activity of the builders, but also to develop them, to take steps toward unconditional fulfillment of the plans for this year and the 5-year period as a whole. This is a task of great importance to the entire party and the entire state.

The results for the first half of the year showed that builders have not altogether coped with the assignments given. First of all, the necessary concentration of resources on construction of projects near completion was not achieved, the plan was not fulfilled for activation of fixed capital or of a number of production capacities, especially in the electric power industry,

ferrous metallurgy, petroleum refining, and the coal, chemical and petrochemical industries. Nor was plan fulfillment achieved for delivery of the marketable construction product, for the rise of labor productivity, or for the reduction of the prime cost of construction and installation work. Moreover, many projects were not completed among those which were scheduled to be put into operation last year. USSR Minpromstroy [Ministry of Industrial Construction] once again did not see that capacities were put into operation for the production of rubber footwear at the Astrakhan plant and for the production of caustic soda in the association "Khlorvinil" in Ivano-Frankovsk Oblast. USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] for the second time failed to meet deadlines for delivery of facilities for the production of iron ore concentrate and for mining iron ore at the Stoylenskiy Mining and Ore-Dressing Combine. USSR Minstroy [Ministry of Construction] is carrying out work slowly on construction of the Tutayev Diesel Unit Plant in Yaroslavl Oblast.

This cannot be taken as a normal situation. The state plan is the law, it cannot but be carried out. This needs to be thoroughly understood by managers in the economy and all personnel involved in building new enterprises and projects.

Putting construction in order as demanded by the decisions of the November Plenum of the CPSU Central Committee is one of the central tasks in the national economy. This is now the main and decisive order of business, one that cannot be put off.

The Belorussian republic party organization has been consistent and purposive in solving the problems which face builders. In a plenum of the Belorussian CP Central Committee organizational and political measures were drafted and adopted to further improve the management of capital construction. In a way this is a program for improvement of economic planning, project planning and the organization of the construction process and for development of the physical and technical capability. In order to increase the efficiency of capital investments the Belorussian CP Central Committee and party obkoms, gor-koms and raykoms have been thoroughly examining the drafts of plans, and they are strict in requiring that managers in the economy and party organizations shape construction plans realistically and utilize capital investments. A course has been adopted toward concentration of efforts above all on construction projects near completion and on a sharp reduction in the number of projects under construction at the same time.

A considerable effort has been made to improve the structure of party organizations, to improve the deployment of party members in decisive sections of construction work. This approach is yielding favorable results. Labor productivity in collectives is higher than assigned in the planning targets.

But in many regions of the country shortcomings in the organization of the construction process are still being corrected indecisively, and the level of organizational work does not fully meet the requirements of the present day. The CPSU Central Committee is orienting party organizations, work collectives and economic authorities toward a full-fledged concentration of efforts along the main directions of the construction assembly line.

USSR Gosplan designated constructions of priority state importance in the program of projects to be completed this year. The dynamic development of our economy depends first of all on them. And it is to them that the necessary manpower and resources should first be committed. They represent less than 10 percent in the annual plans for construction and installation work of ministries operating as construction contractors. It seemed that there were the personnel, the materials and the equipment for successful operation and to guarantee activation of these capacities. Yet plans are not being fulfilled at certain construction sites. This is taking place in Kazakhstan, in the Ukraine, in Krasnoyarsk Kray, and in Belgorod, Tula, Kuybyshev and a number of other krays and oblasts.

The reasons lie in the fact that the key officials of the ministries operating as construction contractors are slack in requiring that their subordinate organizations concentrate efforts on projects near completion, often reconciling themselves to cases of a scattering of labor and physical resources. In addition, as noted at the conference in the headquarters of the CPSU Central Committee, certain ministries have not reorganized their effort in the light of the requirements of the recent plenums of the CPSU Central Committee, and are slack in requiring that managers adhere to state and plan discipline. The relevant central ministries and departments must take additional steps to see that all plant capacities and projects are started up this year, and party committees must monitor the work of the administrative apparatus more closely.

Local party authorities also bear responsibility for construction of projects which have primary importance. There are still quite frequent cases when priority is given to construction projects of local importance. The various manifestations of this kind of approach to the job must not go unnoticed; they must be subjected to severe party assessment.

Large untapped potential for increasing the efficiency of construction lies in better utilization of all internal reserves and capabilities. "The key task in the economic sphere," Comrade Yu. V. Andropov emphasized in his speech at the June (1983) Plenum of the CPSU Central Committee, "is a fundamental rise of labor productivity." This problem has extremely great importance for construction organizations operating as contractors. For instance, because of the low level of the organization of work and construction a great deal of worktime is lost. Checks made by the USSR Central Statistical Administration [CSA] have shown that in many construction organizations losses of less than one shift in and of themselves represent between 6 and 10 percent or more. And this when there is a shortage of labor resources.

Straightforward organization of work and highly productive work of every construction worker and fitter and the efficient use of equipment and transportation are a priority job for managers at all levels. The correct thing will be for party organizations and committees to be more exacting toward them and to be entirely strict in calling to them to account for breaches of discipline.

A great deal of experience has been gained in the country with the brigade organization of work according to the method of N. Zlobin. Its advantages are well known. It helps to considerably reduce construction time and, most important, to raise labor productivity and inculcate in people a spirit of the communist attitude toward work and socialist property. Dissemination everywhere of the brigade contract as the most effective form of the organization of internal cost accounting (khozraschet) must become an explicit obligation of managers and must occupy an important place in the work of party organizations.

Quite often we hear complaints from construction workers about unsatisfactory supply of materials and equipment. As a matter of fact, there is a problem here. USSR Gosstnab has not yet done everything envisaged by the decree of the CPSU Central Committee and USSR Council of Ministers on improvement of the economic mechanism to make the conversion to centralized supply of resources to construction workers through supply-and-sales depots of regional components. Only a small portion of organizations operating as construction contractors have so far been converted to this form of supply.

But there is also something else to bear in mind—at many construction sites there are large losses of physical resources. Party organizations and work collectives must wage a decisive battle against mismanagement and wastefulness and must take effective steps toward conservation of all types of physical resources and fuel and energy. Solving this problem depends on the organization of production, on the qualifications of personnel, on mechanization of laborious processes, and on the level of the indoctrination effort in collectives. In short, it is a many-sided problem.

The state has invested very large resources in developing the production capability of builders. Capacities have been built guaranteeing an increase in the volume of construction, above all by raising the level of industrialization of the construction process. But the facilities of many enterprises in the construction industry, especially those for manufacturing products for large-panel housing construction, have not been loaded up to their rated capacity. Wherever due attention is not paid to the question of utilization of the capability, the indicators for fulfillment of plans for contract work are extremely low. This is typical of construction organizations in Khabarovsk and Maritime Krays and Vologda, Smolensk and Pskov Oblasts. Managers in the economy must increase the coefficient of utilization of the production capability already in place, must apply it more fully to meet the needs of the construction process, and must raise industrialized construction to a qualitatively new level. Nor can local party authorities and the party committees of ministries stand aloof from dealing with these important problems.

Improvement of the situation in capital construction depends in large part on the activity of ministries which figure as customers. Builders are still issuing reproaches about the tardy preparation of project plans and estimates and about the low quality of design features in project plans, which sometimes result in unproductive costs, modifications and poor work. The level and quality of project planning are indicated by this fact: Glavzapstroy [Main Administration for Construction in Western Regions] of USSR Ministry

examined 114 project plans and made recommendations concerning 82 of them to improve the design features; carrying out those recommendations will make it possible to reduce the original estimated cost of construction by 18 percent. There are still quite frequent cases when project plans call for outdated technology and low-output equipment, so that the manufacture of an outdated product is predetermined even in advance. What is more, construction plans are not linked to material-technical and financial resources, nor to the capabilities of construction contractors. In recent years there has been some drop in the number of projects under construction at the same time, but their number is still rather formidable. Tardy preparation of operating personnel is having a serious impact on the starting up of facilities. The adverse manifestations of this practice are obvious.

Measures to carry out the Food Program and Energy Program now occupy a central place in the plans of builders. The reference is to the construction of nuclear and large thermal power stations, enterprises at the Kansk-Achinsk, Ekibastuz and South Yakutia Fuel and Energy Complexes, further development of the West Siberian petroleum and gas region, the building of facilities and capacities for the production of manufactured fertilizers, of agricultural and food machinebuilding, of the food branches of industry and those processing farm products, and of agricultural facilities. These tasks are most difficult to perform in the Nonchernozem Zone of RSFSR. Everything needs to be done to fulfill construction plans in this region so that the construction sites of the agroindustrial and fuel and energy complexes are crash projects in fact, not just in words. Here again local party organizations must play their role in mobilizing construction collectives to perform the main tasks.

Intensification of social production is inseparably bound up with a substantial expansion of the volume of work done on reconstruction and retooling of existing enterprises. This line makes it possible to increase the efficiency of capital investments and affords the possibility of making the transition more rapidly to producing a better-quality product. Work collectives in Moscow, Leningrad, and Sverdlovsk, Ivanovo, Rostov and a number of other oblasts have gained a great deal of experience in this. Quite good results have been obtained from reconstruction of the Izhorskiy Plant of Minenergomash [Ministry of Power Machinebuilding], the Kaluga Automotive Electrical Equipment Plant of Minavtoprom [Ministry of Automotive Industry], the Gomel Machine Tool Assemblies Plant of Minstankoprom [Ministry of Machine Tool and Tool Building Industry]. Without increasing the number of work stations, they managed to substantially increase the volume of output and to raise labor productivity.

At the same time there are quite a few cases when the funds spent on reconstruction do not yield the return they should because design features in project plans were not thought through. For instance, the Kharkov "Elektrotyazhmash" Plant spent millions of rubles on retooling. Once it had installed 700 units of equipment that was not automated, the plant had to hire another 1,000 workers. As a result this enterprise's utilization of capacity has dropped considerably.

Party committees and organizations must do a great deal more to raise the party leadership of construction to a qualitatively new level. It is important to make fuller use of progressive know-how in this effort. The Sverdlovsk party organization can serve as an example of going about this job astutely. In recent years they have given shape to an effective system of measures in the fields of economic organization and ideological indoctrination aimed at developing the initiative of work collectives, at increasing their independence, and at application to production of everything that is new and progressive. The role of primary party organizations has been enhanced in improving socialist competition and in guaranteeing efficient and well-coordinated activity of all participants in the construction process. The oblast party committee has been more demanding toward economic managers as to fulfillment of planning targets at the most important projects near completion. These projects are constantly monitored, and the situation at them is regularly discussed in bureaus of party obkoms, gorkoms and raykoms. Party organizations and work collectives are receiving the help they need in good time. Not only the well-known initiative concerning fulfillment of plans by brigades with fewer people, but also new initiatives have developed widely in the oblast, specifically: "Mechanized work on an engineering basis in every brigade" and "Work discipline and social discipline--the guarantee of collectives." This is one reason why the activation of all the most important projects is guaranteed in the oblast every year.

Performing the complicated and highly diverse tasks of capital construction and increasing its efficiency are now unthinkable without increasing the ideological effort in work collectives. High final results are achieved wherever the indoctrination, propaganda and organizational effort is closely linked to specific practical matters. The June (1983) Plenum of the CPSU Central Committee called upon party organizations and work collectives to act in precisely that way.

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STROYBANK OFFICIAL EXAMINES WAYS TO STIMULATE ENTERPRISE RENOVATION

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[Article by N. N. Kirillov, candidate of economic sciences, chief of the Leningrad Oblast Office of USSR Stroybank: "Effectiveness of Renovating and Retooling Operating Enterprises Can Be Increased"]

[Text] Large amounts of capital investments are constantly allocated to the development of the USSR's national economy. During the 11th Five-Year Plan they will comprise more than 12 billion rubles in Leningrad and its oblast alone. And it is very important to spend them in such a way as to obtain a rapid, substantial return on investment. For this purpose it is necessary, as has been pointed out in the 26th CPSU Congress, to direct capital investments primarily into the renovation and retooling of operating enterprises. Increasing the proportion of these operations was designated at the November (1982) Plenum of the CPSU Central Committee as one of the ways of solving the problem of effectively utilizing the means being directed at development of the economy.

As calculations have shown, specific outlays on creating a unit of production capacity in the case of renovation are an average of 15 percent, and in the case of retooling 30--35 percent, lower than they are in the case of new construction. Moreover, it should also be noted that, under the conditions of the extremely insignificant growth of labor resources during the 11th Five-Year Plan, renovation and retooling of operating enterprises constitutes the fundamental means of increasing product output.

In the Leningrad region constant attention is being paid to improving the reproductive structure of capital investments. As a result of such well-planned work, a considerable part of the funds, i. e., almost three-fourths of the capital investments in the 11th Five-Year Plan, have been earmarked for the renovation, retooling, and expansion of operating production facilities.

Many years of practical experience have convinced us very clearly that the renovation and retooling of operating enterprises facilitate the most rapid return on investment for each ruble invested in production, curtail the time periods required to reach the reimbursement point, and increase the effectiveness of capital investments.

Quite a few examples could be cited of the high economic effect resulting from the renovation and retooling of operating enterprises.

Thanks to the introduction of comprehensive measures with regard to retooling the operating enterprises of the Leningrad Optical-Mechanical Association imeni V. I. Lenin, during the last few years alone the volume of production has significantly increased, particularly in the production of items belonging to the category of the highest quality. Moreover, labor productivity has increased, while outlays per ruble of commercial output have decreased.

At the Leningrad Metal Plant Association solely by virtue of retooling two start-up complexes for turning out steam turbines were introduced. Furthermore, in both cases the expenditures for equipment amounted to 97--98 percent, and only 2--3 percent went for the construction and installation work.

In renovating the Porcelain Plant imeni Lomonosov the following task was assigned--to significantly increase the output of high-quality products. The client and the contractor, in conjunction with specialists from the planning institute, worked out comprehensive measures for ensuring an increase in the plant's capacity by means of modernization and replacement of obsolete equipment in the operating areas. Successfully carrying out these measures allowed them to put into operation 3 months ahead of the deadline capacities for turning out 6.5 million product units annually. Labor productivity increased by 40 percent. Capital investments herein amounted to 3.5 million rubles, whereas it would have been necessary to spend at least 5.5--6 million rubles on the construction of a new, analogous enterprise.

At the Il'ich Leningrad Abrasive Plant capital investments, in accordance with the plan for renovating the existing enterprise and modernizing the equipment, amounted to 30.2 million rubles, including 19.9 million rubles for the construction-and-installation work. At the same time, the construction of a new plant with the same volume of operations would have required 57 million rubles, including 34 million rubles for the construction-and-installation work.

At the Sovetskaya Zvezda Thread-Spinning Combine the dyeing-and-bleaching workshop became the top-priority project for renovation. Its limited potentials were held back the growth rates of labor productivity in the other sub-divisions. Expansion of the workshop and the installation therein of up-to-date equipment have allowed an increase in thread output by 55 million spools per year. And, on the whole, the production volume at the combine increased by 13 percent, while the number of workers in the renovated workshop was reduced by 34 percent.

Practical experience has demonstrated that the effectiveness of retooling operating enterprises is significantly increased as a result of introducing highly productive equipment with a large unit capacity and less energy outlays. This is testified to by the experience accumulated by the Leningrad Planning Institute No. 3 of the USSR Ministry of Light Industry. Thus, at the Dulevsk Porcelain Plant imeni PRAVDA the replacement of obsolete equipment by up-to-date units, in accordance with its plan, provided an increase in volume by 20 percent without changing the number of its employees. Here, by means of

improving production quality, the output of complete sets of dishes was doubled, and, as a result of more efficient utilization of capital investments, their effectiveness increased by 45 percent in comparison with the average for this sector.

During recent years in the Leningrad area the following large-scale production facilities have been renovated: in the Kirovskiy Plant and Svetlana Associations, as well as those of Pozitron and Elektrosila imeni S. M. Kirov, at Izhorskiy imeni A. A. Zhdanov and Krasnyy Vyborzhets Plants, and many others. A great deal of work has been conducted with regard to retooling the following factories: the Oktyab'skaya, the imeni Zhelyabov, those of the curtain-lace association, and other very old enterprises of the light and food industries. The course aimed at renovating and retooling enterprises in various sectors has facilitated, to a large degree, the enhancement of this region's scientific and technical potential.

However, a number of ministries and departments are still not according sufficient attention to this important problem. Furthermore, certain ministries, though allocating considerable funds for retooling, do not plan increased capacities for the enterprises involved. For example, in 1983 the USSR Ministry of the Chemical Industry and the Ministry of the Petroleum Refining and Petrochemical Industry allocated to the Leningrad enterprises for the retooling of their operating production facilities 6,504,000 and 11,495,000 rubles respectively, without assigning any tasks herein with regard to increasing the capacities.

Analysis has shown that at a number of construction projects the clients and contractors dissipate their strengths, material, and financial resources on many facilities which are being built slowly. When the plans are checked up on, instances have been ascertained of carrying out new construction under the guise of renovation, as well as including in the planning-and-estimate documentation of general-construction projects which do not belong to the category of renovating fixed capital. For example, the Lenproyektmebel' Institute of the Sevzamebel' Association of the USSR Ministry of Timber, Pulp and Paper, and Wood Processing Industry provided in the plan for the retooling of the panel-component workshop of Furniture Combine No. 1 for increasing the capacity, while, at the same time, more than doubling the number of workers.

Likewise not well-founded was the plan for retooling the Luzhsk Abrasive Plant, as worked out by the Giprostanok Institute of the Ministry of the Machine Tool and Tool Building Industry. The operations provided in the estimate with regard to creating capacities for fuel oil, roads, etc. in the sum of more than 100,000 rubles could not be called anything but new construction. Therefore, the bank introduced a proposal to exclude the above-indicated expenditures from the plan. As a result, the specific capital investments per unit of capacity will be lowered by 17 percent. Moreover, there will also be a reduction in the length of time required for construction.

At the artistic-glass plant of the USSR Ministry of the Construction Materials Industry a new workshop was planned with an area of 11,000 m² for turning out commercial-grade dishware. After studying the technology of making such a product at analogous enterprises, the bank's engineers proposed that, instead

of new construction, a retooling of the existing areas be carried out, with the installation of two complete sets of lines providing the same increase in output. As a result, the Ministry changed the assigned task for the plan. The economic effect achieved thereby amounted to more than 3 million rubles.

The effectiveness of retooling and renovation manifests itself in the improvement of the technical structure of capital investments, which, as a consequence of the enterprises being put into operation, facilitates the relative increase of the active portion of the fixed capital. Nevertheless, the absence of indicators of the efficient structure of capital investments does not permit the use of the control function of the financial-credit mechanism, and the banking institutions have been compelled to utilize allocations for renovation to finance the construction of those enterprises and projects whose technical structure of capital investments is worse than at enterprises being financed by means of allocations for new construction. Analysis of the planning-and-estimate documentation for the renovation and retooling of the Leningrad enterprises and associations of the USSR Ministries of Light and Food Industries has indicated that the specific proportion of construction-and-installation work within the estimated cost amounts to 65--73 percent. Moreover, the proportion of expenditures on equipment does not exceed 31--25 percent.

In connection with this, it seems feasible to put into practice limit norms of the proportion of construction-and-installation work within the total capital investments in renovation and retooling of existing enterprises with their appropriate differentiation by sectors of the national economy and types of operations (renovation, retooling, expansion). The presence of such coefficients will give the bank's officials the right, in case they are exceeded, not to open up financing of planning and research at the expense of means allocated for the renovation and retooling of operating enterprises.

Of great importance for expanding the scope of renovation and retooling of operating enterprises, as well as improving the technical structure of capital investments is the encouragement of planning organizations. Decree No. 312 of the CPSU Central Committee and the USSR Council of Ministers, dated 30 March 1981 and entitled "On Measures for Further Improving Planning and Estimates," provided for the possibility of increasing the cost of developing planning and estimate documentation for expanding and renovating operating enterprises, buildings, and other structures by means of utilizing correcting coefficients on the outlays for planning. These are applied in order to cover the additional expenditures arising because of the growth of labor consumption in carrying out the planning and research operations: by factors of as much as 1.3 for plans and as much as 1.6 for the working documentation.

Nevertheless, it seems poorly founded to apply decreasing coefficients of as much as 0.8 to the cost of working plans for the retooling of operating enterprises. Such a reduction in the cost of planning and research operations does not create among the planners a motivation to execute the plans for retooling operating enterprises and to improve the quality of the planning-and-estimate documentation.

The existing statutes with regard to encouraging planners by virtue of the older publication (in a number of cases) and the disconnectedness (as a whole) are in need of renovation, systematization, and, in our opinion, of consolidation into a single document. Moreover, it is necessary to make economic, including material, incentives, on the one hand, the determining factor in the selection of the operational thrusts of the planning-and-estimating organizations and, on the other hand, a substantial and strictly targeted encouragement for utilizing positive operational experience and improving the quality of planning.

Experience in conducting the renovation and retooling of operating enterprises testifies to the need for strengthening the economic motivation of contracting organizations to carry out this work. Despite the measures provided for in the decree of the CPSU Central Committee and the USSR Council of Ministers, dated 12 July 1979, directed at creating the necessary conditions for expanding work with regard to the retooling of operating enterprises, up to now we have still not completely solved the problem of eliminating the "unprofitability" of conducting these operations for the contractor in comparison with new construction. It is a well-known fact, of course, that to conduct work under the conditions of ongoing production is considerably more complicated than carrying out new construction. During renovation the work volumes are much less than during new construction, while their labor consumption is higher and their conditions of execution more complicated. They do not allow the full use of construction vehicles, machinery, and manpower. And so the amount produced per worker is sharply reduced, the cost is increased, reducing, in turn, the profits and the incentive funds. For example, an analysis of the operational indicators of Glavzapstroy [Main Administration for Construction in Western Regions] over a number of years bears witness to the fact that in those trusts which principally engage in renovating and retooling operating enterprises the average output is 23 percent lower, while the outlay of wages for the volume of work performed is 15 percent higher, and the bonus payments are considerably lower, than in those trusts which are engaged in carrying out new construction. At the same time, the cost per m² of production capacity introduced by renovation is 20 percent less than in the case of new construction.

As a result, construction organizations incur additional expenditures, which, in most cases, are not covered by the corrective sectorial coefficients applied to the existing estimate norms for construction-and-installation work and the norms of applied expenditures, as established by USSR Gosstroy in accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers on perfecting the economic mechanism.

It seems feasible to examine the question of changing these coefficients with their differentiation, depending on the complexity of the renovation work, in order to increase the economic motivation of the construction organizations to carry out measures providing the minimal amounts of construction-and-installation operations.

Furthermore, the material incentives for the construction and planning organizations must be made dependent on the proportion of operations carried out with regard to the renovation and retooling of operating enterprises.

In our opinion, it is necessary to increase the sizes of the bonuses paid out for putting renovated facilities into operation with the established time periods, as well as ahead of schedule, by 50 percent and 25--30 percent respectively instead of the 15 percent, as established at the present time. We think that it would also be feasible to solve the question of the client transmitting to the general contractor a portion of the profits received from the basic activity by virtue of the pre-schedule putting into operation of the capacities of the renovated facilities.

An important role in increasing the effectiveness of renovating and retooling operating enterprises is played by perfecting the financial-credit mechanism.

As practical experience has shown, financial-credit levers at the present time do not exert the influence which they should on improving the technical structure of capital investments. This is influenced by the fact that equipment is considered to be included among the production reserves and assumes the nature of embodied capital investments only after being turned over for installation.

An important reserve for improving the technical structure of capital investments is the reduction in the supplies of uninstalled equipment. An increase of these supplies occurs because of the failure to prepare the construction sites in time for installation, the shipment in of equipment ahead of time, the failure to provide projects with planning-and-estimate documentation or their non-inclusion in the plan of capital construction, as well as the lack of coordination between the total, as provided by the agreements for delivering equipment, and the funds allocated for paying it, along with a number of other reasons. Thus, the task consists in drawing together as close as possible the time periods required for manufacturing the equipment by the supplier-plants, its installation, and the beginning of producing items on this equipment. The banking institutions ought to achieve this by means of strengthening the effectiveness of controls over the utilization of the funds which have been allocated for the acquisition of equipment in order to prevent it from piling up in supplies and influencing the reduction of the time it spends in being installed.

Prior to 1965 banking credit did not participate in mediating the movement of the principal portion of the equipment. Credit used to be employed only as a means of paying for imported equipment or large-scale engineering and electrical-engineering Soviet equipment scheduled to be installed during the following year. Such a procedure for crediting the above-indicated Soviet equipment was brought about by the fact that for a current year funds were not provided for its acquisition in the plans of financing capital investments. Granting credit for payment for imported equipment had the purpose of making account settlements on time with the foreign-trade organizations regardless of the financial status of the consignees of the equipment.

At the present time, in extending credit for imported and Soviet large-scale engineering and electrical-engineering equipment, the banking institutions utilize such an effective economic lever as interest for the use of credit, which, upon the expiration of the plan deadline for turning the equipment over for installation, is levied in an increased amount. However, the question of

the source of the interest payments for credit has not yet been resolved. These amounts are not taken into account either in compiling estimates for capital construction or in distributing the profits received as a result of operating the fixed capital which has already been introduced. Increased interest amounts for using credit are paid by operating enterprises by means of profits from the basic activity and by those newly under construction--from the accounts of the industrial associations or other appropriate organs of economic administration by means of centralized funds and reserves. In their absence or insufficiency payment is made from the accounts of the ministries and departments by means of centralized funds and reserves.

The system of accounting and crediting deliveries of equipment which has been in operation up to the present time did not create economic motivation in the plants engaged in the delivery activities in reducing the period from the manufacture of the equipment to its being put into operation. Therefore, USSR Stroybank, beginning in 1971, has been conducting an experiment on introducing accounts for equipment fully completed and installed by these plants. Under the conditions of the experiment there have been substantial changes in the mutual relationships between the participants in construction: the clients, contractors, and suppliers of equipment. On the basis of a title list which has been worked out for the entire period of construction in accordance with a plan and an estimate, the client concludes a general agreement with the construction organization to carry out the entire amount of construction-and-installation work and a direct agreement with the chief plant supplying the basic technical equipment for the engineering lines, units, aggregates, and their installation. In accordance with the conditions of the experiment the manufacturing plant is accountable for the delivered and installed equipment not after the shipment but after it is put into operation. The chief plant delivers a complete set of equipment and installs it by its own efforts or brings in other organizations for this purpose. For the period of completing and installing the complete set the chief manufacturing plant receives banking credit, which is amortized after receipt of funds from the client. The conditions of the experiment provide both an economic incentive for speeding up the putting of the enterprises into operation as well as the material responsibility for observing the contracted obligations.

At the present time in the complete delivery of equipment, units, means of mechanization, automation, and controls, the client is accountable along with the general supplier for the complete set of equipment delivered or installed as a whole. Up to the plan deadline for completing the delivery of the entire set of equipment or its installation the general supplier is granted banking credit. Upon the expiration of the plan deadline the extension of credit continues with the levying of higher interest rates for the use of the loan.

In the "turnkey" construction of an enterprise, structure, or project, the general supplier of the equipment concludes an agreement to deliver it and install the equipment directly with the general contractor.

In order to further improve the financing and crediting of outlays for equipment, in our opinion, it would be feasible to transfer to the chief supplier-plant the functions of general contractor with the involvement of the sub-suppliers (industrial enterprises) as well as the sub-contractors

(construction and installation organizations). Above all, this recommendation can be implemented by carrying out measures with regard to renovating and retooling operating enterprises.

Also in need of improvement is the procedure for accounting for and planning equipment prior to its being turned over for installation included within the production supplies. In a number of cases the existing procedure has facilitated at enterprises the piling up of excessive and unneeded equipment, counted among the production reserve supplies. Despite this fact, the given enterprises (clients) continue to be allocated funds for acquiring equipment. In our view, it would be feasible to include the cost of the equipment in the amount of capital investments at the time of payment, regardless of the deadlines for turning it over for installation. And it should be accounted for prior to its being put into operation, as included within uncompleted construction, i. e., analogously to the accounting for construction-and-installation operations. At the same time, we should enhance the role played by such an effective economic lever as interest on capital in order to extend its influence to the entire above-plan remnant of unfinished construction. As a result, interest on capital will be imposed on equipment prior to its being turned over for installation as well as on equipment after it has been turned over for installation.

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CONSTRUCTION PLANNING AND ECONOMICS

PROJECTED NORMS, PRICES IN CONSTRUCTION FOR 1984 GIVEN

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[Article by Yu. I. Malimanov, chief of the Department of Estimate Norms and Pricing in Construction, USSR Gosstroy: "New Estimate Norms and Prices in Construction"]

[Text] Estimate documentation is an inseparable part of plans for the construction of enterprises, building, and structures in any branch of industry and the national economy. Estimates are used to determine the economic indicators of the construction projects being planned and the effectiveness of the capital investments in each specific construction site.

In addition to the function that the estimate carries out as a construction-planning document that defines the cost of the future construction, it also executes a number of no less important functions which were defined by the decree of the CPSU Central Committee and the USSR Council of Ministers, dated 28 May 1969 and entitled "Improving the Planning of Capital Construction and Intensifying the Providing of Economic Incentives for Construction Production."

In conformity with that decree, the estimate for construction must be the basic document on the basis of which one carries out the planning of the capital investments, the financing of the construction, and the settlements for executed operations between the customer and the contractor. The estimate must also serve as the basis for the further reinforcement of cost accounting in construction and the evaluation of the activities of the contract and construction-and-installation organizations and customers.

Construction-and-installation operations in capital construction are basically carried out by the efforts of contract organizations, the entire economic activity of which is based on principles of cost accounting. The sole source of the funds that guarantee the functioning of their economic mechanism is the funds obtained for the executed operations in conformity with the approved estimate documentation. From this it follows that the construction estimate must stipulate the funds for compensating all the expenditures of the normally operating construction and installation organizations, customers, and the construction-planning-and-survey and other organizations, which they incur in the process of carrying out the construction of the particular

building or structure. The estimate norm lists and methods for determining the estimated cost must guarantee the maximum possible accuracy and reliability for the determination of the cost of the construction output.

The methodology for determining the estimated cost of construction and the system of norm lists that is applicable for that purpose have traveled the complicated path of evolution from the estimate of the cost of the operations for the conditions of each specific project to the creation of a nationwide system for developing and approving in a centralized manner the norm lists that are mandatory for all ministries and departments that are carrying out the construction of enterprises, buildings, and structures in all branches of industry and the national economy.

In the present-day form, the system of estimate norms and prices was formed in the early 1950's. A substantial peculiarity of the accepted methodology of estimate pricing in construction is the fact that the estimate norms and prices remain fixed for the duration of a rather prolonged planning period despite the changes that occur during that time in the wholesale prices of manufactured output, transportation rates, and the conditions for shipment of the materials, articles, and structural elements, in the technological processes in construction production, and in the technical equipping of the construction and installation organizations. All these changes are taken into consideration when planning production costs and profits for the construction-and-installation organizations.

This method of determining the estimated cost guarantees the stability of the planning norm lists, and comparability in the dynamics of the indicators that characterize the work of the contract organizations, and this is of great importance for evaluating their activity. The advantages of the accepted methodology of computing the current changes in the pricing factors by means of the centralized regulation of the financial and planning indicators of the activities of the construction-and-installation organizations makes it possible to preserve a stable level of estimated prices for a prolonged period and precludes the need to refine and re-approve the estimate documentation with each change in wholesale prices, rates, or other elements of cost.

In addition to the indisputable advantages of the application of stable estimate norms and prices, this system also has definite shortcomings that are linked with the fact that, with the passage of time, the actual expenditures of the contract organizations cease to correspond to their evaluation that was accepted in the estimates.

The estimate norms and prices that became effective on 1 January 1969 are based on the wholesale prices of manufactured output and the rates for the shipment of freight which became effective on 1 July 1967, the transportation schemes for the shipment of freight for construction that were established in 1963-1965, on the level of the technology, technological processes, and organization of construction production that formed in the 1960's, and a number of other normative documents that were in effect during that period.

During the years that have elapsed there have been substantial changes in the wholesale prices of a number of materials that are used in construction (reinforced-concrete articles, bricks, rolled ferrous metals, cable products,

plumbing materials, etc.), and new rates for the shipment of freight by rail and ocean transportation have gone into effect. The further specialization of the production of output at the enterprises of the building-materials industry and the construction industry has led in many parts of the country to substantial changes in the transportation schemes and, as a consequence, to an increase in the expenditures for shipments. In addition, there has been a change in the structure of shipments of material resources -- there has been a considerable increase in the share of shipments via bases and warehouses of territorial agencies of USSR Gosstnab, and ministries and departments, which charge the purchasers for various markups that were not taken into consideration in the estimated prices.

As a result of these and other reasons, the actual expenditures for the purchase of many types of materials and articles have surpassed the level of the 1969 estimate prices.

Substantial changes also occurred during the period that has elapsed in the level of technical equipment of the construction and installation organizations and in the technological processes in construction. Methods that have been widespread are new methods of carrying out operations which guarantee the lowering of the labor expenditures but which require the additional expenditure of material and financial resources.

Thus, in the early 1980's there has been formed a lack of conformity between the estimated norms and prices, on the one hand, and the actual expenditures for the purchase of material resources and the fulfillment of the operations, on the other. That difference increased even more as a result of the systematization, effective 1 January 1982, of the wholesale prices and rates in industry. The wholesale prices of reinforced-concrete articles increased by 29 percent; concrete articles, by 33 percent; bricks, 42 percent; armatures, 38 percent; logs, 44 percent; lumber, 35 percent; parquet, 51 percent; window frames, 40 percent; etc.

Under these conditions the changeover in construction to the new estimate norms and prices had become a necessity. As a result, in early January 1981 the USSR Council of Ministers adopted a decree concerning the changeover to new estimate norms and prices in construction, effective 1 January 1984.

Each changeover to new estimate norms and prices in construction represents a substantial stage, when the entire system of estimate norms is put into conformity with the achieved level of technical progress in the branch and the new level of prices and rates in industry.

The history of estimate work and pricing in construction has already gone through three such stages: the changeover to estimate norms and prices in 1955, in 1969, and the current changeover, effective 1 January 1984. The average interval between changes comes to 14-15 years.

With each changeover, practically speaking, the entire system of estimate norms and prices is completely redeveloped -- that is, the system with the use of which one determines the cost of all types of operations and expenditures encountered in modern construction. For a more complete idea of

the nature and scope of the operations to be executed when changing over to a new level of estimate norms and prices, it is necessary to dwell briefly on the structure of the estimated cost of capital construction and the system of estimate norms that are used.

On a large scale, the estimated cost of constructing any item intended for production or civil-housing purposes can be represented as the total cost of the construction and installation operations, equipment, furniture, and stock, the expenditures for which a financial limit has been established, which include the overhead expenses, planned accumulations, additional expenditures during the carrying out of operations during the wintertime, expenditures for the construction of temporary buildings and structures, a reserve of funds for unforeseen operations and expenditures, for the maintenance of the managements of the enterprises under construction, and a number of other expenditures, as well as the cost of the so-called other expenditures. The estimated cost of each group of the types of operations and expenditures that were mentioned is determined on the basis of the corresponding estimate norms and rate lists.

The estimated cost of the construction operations is determined on the basis of collections of Regional Unified Unit Cost Rates (YeRYeR), which encompass all the known types both of general-construction operations and special operations.

Each unit rate list is a comprehensive norm list that determined, for each accepted unit of measurement of the corresponding type of operations, the cost of the material resources, the total amount of wages for the workers who are immediately executing the work, and the cost of operating the construction machinery and equipment to be used. The basis for developing the unit rate lists is provided by the estimated element norms (ESN), which define in terms of physical measurement the need for material resources, the expenditures of labor, and the number of machine-hours for the optimal set of machinery. In order to convert the physical measurements to monetary cost terms, one uses specially developed collections of estimate prices for all types of material resources; tariff rate lists for wages to be paid to construction workers; collections of estimate prices for the operation of construction machines; collections of rates for the shipment of freight for construction by motor, rail, air, and water types of transportation; and a number of other norm lists.

Estimated element norms and their corresponding unit cost rates have been grouped into 50 collections of each, which encompass more than 16,000 types of operations. When new types of operations arise which have not been included in those collections, additional ESN and unit cost rates are developed and approved within the established procedure.

New estimated element norms were developed on the basis of refined charts for technological processes, which take into consideration the present-day technological processes and organization of the appropriate types of operations, new types of construction machines and machinery, the application of new types of materials, articles, and structural elements, and the increasing of the industrialization of the operations.

In the new ESN there is a refinement of the norms for waste products and losses of material resources. On the basis of the computations that have been prepared with the use of more than 400 project estimates that were prepared with old and new norms, but in comparable prices, it was established that the application of the new estimated element norms assures the reduction of the estimated cost of construction operation by an average of 1.64 percent. When the new regional unified unit cost rates were being developed, there was a re-examination of their form as applicable to the requirements of the automated preparation of estimates on electronic computers, and the cost rates for types of operations that were similar in nature were grouped into common tables. This simplifies the search for the necessary cost rates and makes it possible to reduce substantially the volume of the YeRYeR collections and, correspondingly, the expenditure of scarce paper to publish them.

An important peculiarity of the new estimated element norms and unit cost rates consists in the fact that, when they were being developed, the preference was given to determining the indicators of the expenditures of the material, labor, and financial resources that had been oriented at the final results of production, irrespective of the methods of fulfillment of the operations or the types of construction technology to be used.

The estimated cost of installing all types of technological equipment is determined on the basis of the collections of cost rates for installation operations. The total number of the collections is 36, including a collection that is being developed for the first time for cost rates for the installation of equipment at nuclear electric-power plants. The development of all the collections was first carried out by the construction-planning institutes of a number of USSR ministries and departments according to a single methodology that was approved by the USSR Gosstroy, with the use of electronic computers. The new cost rates for the installation of equipment take into consideration the latest achievements of technical progress in the field of installation operations and the new principles dealing with the carrying out and acceptance of the operations. The nomenclature for the cost rates has been considerably renewed. Cost rates have been developed for the installation of new types of equipment, and the cost rates for the installation of equipment that is no longer produced have been removed. Changes have been made into the technical parts and introductory instructions in the collections; the changes have been aimed at excluding a number of the principles that are not to be employed when preparing the estimates. The total number of cost rates in the new collections is more than 17,000, which is almost 8000 items fewer than the number contained in the old ones. Changes have also been made in the makeup of the expenditures to be included in the cost rates. For example, the cost rates no longer include the overhead expenses, which now will be included in the estimates in the same procedure as when determining the cost of construction operations. In the future it is planned to carry out the consolidation of a number of cost rates. First of all there will be a consolidation of the cost rates for the installation of the electrical part of all new types of equipment. In addition, in 1984 a norm base will be prepared for the determination of the estimated cost of installing integrated units of equipment.

In conformity with the established procedure of pricing in construction, the cost of the construction and installation operations is subdivided into direct expenditures and overhead expenses.

The direct expenditures include three basic types of expenditures that are included in the cost rates for construction or installation operations. They are the expenditures for the materials that are to be consumed during construction; the wages of the workers who are executing the construction and installation operations; and the cost of operating the construction technology. Those expenditures do not depend upon the department that the operation executors belong to, and are of a branchwide nature. This has predetermined the possibility of the centralized development and approval of those norms.

Our country's territory lies in various climatic zones that substantially differ from one another with regard to the level of the computed winter temperatures, the duration of the winter period, the force and steadiness of the winds, and other climatic factors.

The unit cost rates for all types of operations are prepared on the basis of the conditions for executing them during the period with above-freezing temperatures in the outside air. The complicating factors that arise during the execution of the operations during the wintertime, that reduce the labor productivity, and cause additional expenditures for the maintenance of the work sites, the cleaning and heating of building materials, the processing of permafrost, the installation of temporary enclosures for construction workers, and other subsidiary operations, are taken into consideration by applying increasing coefficients to the cost of the operations. These coefficients, or, as they are called, winter cost-increase norms, are developed for the entire territory of the country, are conventionally divided for this purpose into eight territorial zones. The norms for additional expenditures during the carrying out of operations during the wintertime (NDZ) can be of two types: average annual norms, which are included in the composite estimated computations of the cost, or project estimates, which are used to make settlements among the customers and the general contractors; and complete norms, which are used when making settlements between the general contractors and the subcontract organizations for the volumes of operations that are actually being carried out at below-freezing temperatures. The new norms for wintertime cost increases have been reduced as compared with the previously ones in effect by an average of 15 percent, by means of refining the methodology of determining them and the standardization of individual types of expenditures. The new norms take into consideration the rise in the level of industrialization of construction and the use of modern methods of carrying out the operations.

The overhead expenses represent the entire set of expenditures for organizing and administering the process of producing the entire bulk of commercial construction output that is being produced by the construction-and-installation organization, and therefore the individual projects for which norms are in effect and which are included in the production costs, proportionately to the cost of the direct expenditures.

Three types of norms for overhead expenses at construction operations are established. The first type of norms is overhead-expense norms that are average for the ministry, department, or union republic. Those agencies are given the right to carry out, in accordance with the established procedure, the differentiation of the average norms and to establish the maximum norms for overhead expenses for their subordinate organizations. The second type of norms is the maximum overhead-expense norms that are established for the appropriate ministry without their having the right to differentiate them. The third type of norms is the unified maximum overhead-expense norms for individual types of operations, which norms are mandatory for all executors, irrespective of the department to which they belong. For organizations that carry out construction and installation operations under conditions of the Far North or in localities that are equated with them, increased overhead-expense norms are established.

The new overhead-expense norms for construction operations, which are to go into effect on 1 January 1984, were developed by the USSR ministries and departments and by the union republics on the basis of a unified methodology that was approved by USSR Gosstroy. The draft versions of the new norms for overhead expenses were approved by NIIES, of USSR Gosstroy; an interdepartmental commission created at USSR Gosstroy, with the participation of representatives of USSR Gosplan, USSR Minfin, USSR Goskomtsen, USSR Stroybank, USSR Gosbank, USSR TsSU [Central Statistical Administration], and a number of construction and branch ministries; and were confirmed by the 28 March 1983 decree of the USSR Council of Ministers.

When the average branch overhead-expense norm was being determined, the previously effective nomenclature of expenditure items was basically retained. The changes consist in that there was introduced into that nomenclature an additional item that stipulates the expenditures for the removal of construction trash and the cleaning of the streets. There has been an increase in the item of expenditures for social insurance as a result of the decision that was made to make complete compensation for those expenses by making deductions from the cost of the sold commercial construction output. There has also been an increase in the norms for additional expenditures for materials and the maintenance of production stock, which are the result of the introduction of new wholesale prices and rates in industry. As a result of these refinements, the new norm at the comparable level has been increased by approximately 3 percent. Without a consideration of these refinements, the average branch size of the new overhead-expense norm under comparable conditions has been determined in the amount of 17 percent. The average branch size of the overhead expenses according to the old norms is 17.3 percent.

During the first year of the effective period of the new estimate norms and prices, the total amount of the direct expenditures and the overhead expenses, theoretically, is supposed to correspond completely to the expenses of the construction organizations during the execution of the corresponding types and volumes of operations, that is, the estimated cost is supposed to be equal to the production costs that develop at a normally operating construction organization. For the purpose of creating the conditions for carrying out cost accounting and forming the corresponding funds for the contract organizations, the estimates for construction stipulate special funds that

are to be determined on the basis of the norm for planned accumulations or normative profit. The new planned-accumulations norm was approved by the 28 March 1983 decree of the USSR Council of Ministers, in the amount of 8 percent of the total amount of the direct expenditures and overhead expenses and exceeds the old norm by 33 percent (old norm, 6 percent). The total bulk of the funds to be determined in the estimates in accordance with the new norm is increased by more than 50 percent.

The need to increase the norm for planned accumulations is explained by the refinement of the amounts of payments to the budget for the basic production assets. This item of expenses has been increased from 1.4 to 2.87 percent on the basis of the consideration that the average size of the annual payments for the ministry must not exceed 4 percent of the cost of production assets. As a result of the changeover to settlements between the customer and the contractor for the commercial construction output and for the advancement of credit for uncompleted construction, there has been a considerable increase (by a factor of almost 5) in the planned-accumulations item, which stipulates the funds for paying the interest on bank credit. There has also been an increase in the amount of the funds to compensate the expenditures to maintain the housing and communal management of the construction organizations. The planned accumulations include new items of expenditures for the maintenance and repair of the local motor roads and for the formation of a single fund for the development of science and technology.

The new norm for planned profit of construction organizations to a considerable degree will guarantee the carrying out of cost accounting and the formation of the funds for the organizations operating under the new conditions of planning and the providing of economic incentives.

In addition to the development of new unit cost rates for construction operations and the installation of equipment, and new norms for overhead expenses and planned accumulates, there has also been a re-examination of the norms for other expenditures for which financial limits are established. There has been a refinement in the norms for expenditures for the construction of temporary buildings and structures, for unforeseen operations and expenditures, for the maintenance of the management at the enterprises which are under construction, and a number of others.

Constituting a special group of expenditures to be considered by the estimates for construction are the so-called other expenditures, which are intended to pay the expenses of the customer, the general contractor, and the construction-planning organization, but do not pertain to any definite type of operations, and therefore are not included in the corresponding cost rates. The nomenclature of expenditures that are included in this group contains approximately 70 specifically named items. They include, in particular, the expenditures for the demolition or removal of buildings and structures situated on the area destined for construction; the compensation of the losses of agricultural production; the payment of longevity bonuses, bonuses for continuous service, pay differentials because of work that requires a large number of trips or frequent moves, the payment of various benefits that have been established in the appropriate parts of the country; the application of the method of paying for labor by the job; the payment of

bonuses for the activation of enterprises in individual branches of the national economy and projects to undergo modernization and technical re-equipping; expenditures to move the construction-and-installation organizations from one construction site to another; for the organized recruitment of work; the compensation of the difference between the wholesale and maximum prices; and a number of others.

The nomenclature of the "other" expenditures to be included in the estimate of the specific construction site can differ considerably, depending on the conditions of construction or the nature of the construction organizations. The procedure for determining their extent and for including them in the estimate documentation is regulated by Chapter IV-10 in SNIIP [Construction Norms and Rules], "Rules for Determining Other Expenditures to be Included in Construction Estimates."

A substantial peculiarity of the estimate-norm base that is to go into effect on 1 January 1984 is Part IV of SNIIP, which is being developed for the first time in a new quality and which will consist of 16 chapters containing systematized methodological principles that determine the procedure for developing and employing all the norms to be used when determining the estimated cost of construction. It is planned to carry out the development of this document during the current year and to publish it in the first half of 1984.

The changeover to the new estimate norms and prices in construction is a large-scale state economic task, the participants in the implementation of which are many of the union and republic-level ministries, departments, and organizations. The procedure and deadlines for that changeover were regulated, as was previously mentioned, by the 4 January 1981 decree of the USSR Council of Ministers. At the present time one can sum up several of the results of the work that has been done.

In April 1983 the ministries and departments submitted the draft versions developed by them for the indexes of change in the estimated cost of construction-and-installation and drilling operations for the branch of the national economy and industry and for the sectors within the branch makeup for the base region (Moscow Oblast) and preliminary data concerning the level of change of the cost of machinery and equipment, which change is to be included in the estimates for construction sites that were approved by the 11 May 1983 decree of USSR Gosstroy, No. 94. Simultaneously, territorial coefficients to those indexes were developed; those coefficients take into consideration the changes in the estimated cost of construction-and-installation operations for the country's territory.

On the basis of these branch indexes, adjusted with a consideration of the new norms for overhead expenses and planned accumulations, the new norms for winter price increases and other norm lists, the territorial coefficients, and the branch structure of state capital investments for 1981, a determination was made of the preliminary level of change in the estimated cost of construction-and-installation operations for the national economy as a whole.

The computations that were carried out have shown that the cost of the construction-and-installation operations will rise by an average of 20.5 percent. Depending upon the structure of the operations, the size of the index for the individual branches will range from 1.14 to 1.29.

According to preliminary data obtained from the ministries and departments, the index of change in the estimated cost of equipment was 1.10. Under these conditions the estimated cost of construction for all branches of the national economy will rise by an average of 15 percent.

With the use of the approved indexes, the estimated cost of the construction-and-installation operations in the combined estimated computations of the construction sites was recomputed. The cost of the construction-and-installation operations in the project estimates, which are settlement documents, is recomputed by direct computation on the basis of the new unit cost rates for construction and installation operations. It is very important for the customer ministries and departments that bear the full responsibility for the observance of the established rules for recomputing the estimate documentation to establish effective monitoring of that work, to prevent the inclusion in the recomputed estimates of any changes that are not linked with the introduction of the new estimate norms and prices.

When developing a number of new estimate norms, one encountered difficulties that were linked with the inadequate theoretical study and the low level of the scientific substantiation of the methodology of computations. In a number of instances the decisions had to be made empirically. One senses a greater and greater lack of fundamental scientific research in the area of formation of estimate norms and pricing, in the methods of determining the estimate cost, as tied in with methods of planning the contract activities, in the determination of the planned level of profitability of the construction organization. In these questions, economic science in construction is in great debt to those in practical life.

When determining the expected planned level of profitability of the construction and installation organizations after the introduction of the new estimate norms and prices, it would have been reasonable to expect that the necessary conditions would be created for carrying out real cost accounting in construction, for compensating to every normally operating construction organization all its expenditures, and for obtaining the necessary profit. If one considers the reduction in the profitability of the construction organizations during the period after 1975 basically as the result of the influence only of the price-forming factor, one could expect that the introduction of the new estimate norms and prices would guarantee the normal profitability of the branch. However, in actuality, the problem is more complicated. The computations made by economists indicates that, in the overall reduction of the profitability of the organizations during the previously indicated period, the share of the price-forming factors is no more than one-third. The remaining two-thirds are a consequence of factors that are in the sphere of construction production.

The increase in the noncompensable production costs in construction during recent years is linked to a definite degree with the nonfulfillment by the

construction organizations of the plans for activating the projects and production capacities, and the assignments for the increase in labor productivity, and also with the increase in the nonproduction expenditures, the volumes on nonplanned operations, and other factors. Under these conditions it would be a simplification to expect that the changeover to the new estimate norms and prices, in and of itself, would guarantee the achievement of normal profitability. For the attainment of that goal, the construction ministries must intensify, for all sectors of production activity, the work that is aimed at the complete saving of material, labor, and financial resources, and they must develop and carry out a series of measures that are aimed at reducing the production costs of construction and installation operations.

The new estimate-norm base reflects a number of fundamentally new methodological principles. For example, when evaluating the transportation expenditures, the estimate prices took into consideration the real and economic transportation schemes, refining on a new basis the boundaries and composition of the territorial regions in which the estimate prices were in effect, etc.

New systems of estimate prices have found broader application. In particular, the base estimate prices of the single republic or oblast level were used for the first time on the entire territory of Belorussian SSR and in a number of oblasts of Ukrainian SSR and RSFSR.

For the first time in the practice of determining the estimated cost of construction, a generally mandatory system of estimate prices and unit cost rates is being created, which system encompasses all the regions of the Far North and areas equated to them, where previously, as a rule, departmental norms were used. With the completion of the creation of estimate norms and prices for those regions, the involvement of our country's entire territory in a system of estimate norm lists that were based on a single methodological base was also completed. Thus, in capital construction one will see the logical completion of the tendency that was begun in 1982 in industry -- the tendency of extending into that territory the principle of generally mandatory wholesale prices.

During recent years automated systems for preparing estimate documentation with the use of electronic computers have become widespread. As a result of the changeover to the new estimate norms and prices in construction, the problem of converting those systems to a new norm base has arisen. This is also taking on special importance because the overwhelming majority of the large-scale construction-planning organizations, which make wide use of automated systems, carried out a corresponding reorganization of the structure of their estimate subdivisions and a return -- albeit for a limited period -- to the manual preparation of estimates could lead to considerable complications. Out of a number of systems that were in operation, the most promising ones were selected: AVS-ZYeS, VSA-Z6YeS, and Kompas.

The latest programs in those systems were debugged, an information base on machine carriers was newly created for them, and the first two systems have already been accepted by a commission of USSR Gosstroy for practical use. In September 1983, practically speaking, one saw the completion of the transfer of the programs in those systems and their informational software to

the base construction-planning organizations in the ministries, departments, and union republics, which were given the responsibility of extending those systems to other construction-planning organizations in the appropriate branches.

A new stage in the development of methods of the automated elaboration of estimate documentation is the creation of the unified estimate-norm base (USNB) on machine carriers, the use of which opens up great opportunities in the use of the information contained in the estimate norms, for purposes of planning within the economy and the preparation of production. The use of the USNB provides the opportunity, simultaneously with the preparation of estimates, to issue information concerning the need for material resources, labor expenditures, the estimated total of wages, and expenditures of machines and machinery.

The Kompas program is oriented at the use of the USNB. At the present time that program has been accepted for experimental operation and, after the completion of the elaboration of the USNB, in the first half of 1984, will be transferred for practical use to all the interested organizations.

Thus, the result of the work linked with the changeover to the new estimate norms and prices in construction, which work was done by USSR Gosstroy, NIIES of USSR Gosstroy, the USSR ministries and departments, and the union republics has been the renovation of the entire estimate-norm base to be used for determining the cost of construction and the planning of capital investments.

The second stage of this large and extremely important job stipulates the recomputation, on the basis of the new norms and prices, of the estimated cost of construction and installation operations and equipment by the individual construction sites that are being carried over into 1984. The USSR ministries and departments and the councils of ministers of the union republics are supposed to organize the precise fulfillment of that work, carry out supervision of the observance of the correctness and level of change in the estimated cost, and simultaneously eliminate the possible errors or violations, and guarantee its fulfillment within the established deadlines.

At the concluding stage the customer ministries and departments, in accordance with a program that has been coordinated with USSR Gosstroy and USSR Gosplan, must generalize the results of the recomputation of the project estimates and local estimates on the basis of the unit cost rates and estimate prices, and must carry out a detailed analysis of the derived data and submit objective reports, containing a substantiation of the reasons why any actual indexes deviate from the computed ones. On the basis of the analysis and generalization of these reports, USSR Gosstroy and USSR Gosplan must, in the first half of 1984, report to USSR Council of Ministers the composite data concerning the change in the level of the estimated cost of construction for all branches of industry and the national economy.

The economic results of the changeover in construction to the new estimate norms and prices, if they are viewed in the aspect of the national economy, consist primarily in that they provide a more reliable evaluation of the

capital investments and preclude or reduce to the minimum the distorting influence of the obsolete estimate norms and prices upon the cost structure of capital investments. This is of special importance for the well-substantiated selection of sectors for use and the determination of the investment priorities by branches of the national economy and industry, and for resolving the tasks of increasing the effectiveness of capital investments and making the correct determination of the cost of the newly created fixed assets, and this, in direct or indirect form, influences all the economic indicators that characterize the development of our country's national economy.

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CONSTRUCTION PLANNING AND ECONOMICS

INTERVIEW, STATUTE ON IMPROVEMENT OF CONSTRUCTION ORGANIZATION

Regulations Discussed

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[Interview with Boris Demidenko, chief of Murmanskglavsnab
[Material and Technical Supply of Murmansk Administration], by STROITEL' cor-
respondent: "Murmanskglavsnab. The Comprehensive Delivery of Supplies to Con-
struction Projects"; date and place not given]

[Text] "Create the conditions for the universal dissemination of the multi-skilled, flow-line brigade contract, based on raising the level of engineering preparation and the delivery of complete production-engineering sets."

Basic Directions for the Economic and Social Development of the USSR during the Years 1981--1985 and for the Period to 1990

In the Statute on the Integrated Flow-Line Brigade Contract, which went into effect on 1 July of the present year, it is emphasized that the administration, planning, accounting, and delivery of complete production-engineering sets must be carried out directly to the consolidated construction brigade. Moreover, in accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," it is noted that, under the conversion of construction projects to a system of comprehensive supply of materials, based on requisition orders from the construction and installation organizations in accordance with their needs as determined by the plans and estimates, the delivery of complete production-engineering sets should be carried out through the territorial organs of material and technical supply.

In Murmansk Oblast since 1970 the main territorial administration of USSR Gossnab has taken upon itself the functions of the comprehensive delivery of all types of material resources to the construction projects in accordance with the following schematic: "From the warehouses of

Murmanskglavsnab to the construction projects." Our special correspondent met with the chief of Murmanskglavsnab, Boris Panteleymonovich DEMIDENKO and asked him to tell us about this experiment.

Correspondent: What was it that brought about the restructuring of the supply system?

B. Demidenko: The sharp growth in the volumes and the rise in the level of the industrial nature of construction were being held back by the organization of the delivery of material and technical supplies. By the traditional schematic material resources arrived by transit or from our bases to the UPTK [Administration for the Delivery of Complete Production-Engineering Sets] warehouses of the construction trusts, then, as the needs arose, were shipped to the SMU [Construction and Installation Administration] warehouses with subsequent deliveries to the project warehouses and the construction sites.

Multiple transshipments of goods, the low level of technical equipment at warehouses prolonged the time periods for the delivery of materials to the projects, led to considerable losses of materials from breakage and spoilage, and, as a result, to an unjustifiably high level of turnover expenditures. It frequently used to turn out that one construction project would have surpluses of, let's say, cement, metal, or lumber, while another one did not have enough of them. To lend these materials among neighbors was difficult--being hindered by bureaucratic barriers.

The situation was made worse by the fact that the Polar regions have practically no large bases of their own for producing building materials. We ship cement, glass, slate, finishing and many other materials in from other regions of the country. Lack of confidence about the future used to compel suppliers to be tight-fisted even in those cases where there was no need for this. As a result, the warehouses piled up a great amount of some products and materials, and were short on others. Thus arose the following paradox: although in toto there was fully enough of everything, they were, nevertheless, falling behind in meeting the needs of the construction organizations.

Correspondent: Wherein lies the essence of the restructuring of the system for providing deliveries to the oblast's construction projects?

B. Demidenko: After thoroughly analyzing the existing schematics, Murmanskglavsnab and Glavmurmanskstroy [Murmansk Construction Main Administration] proposed to create a system, new in principle, for delivering material and technical supplies to construction. Our idea was supported by the party oblast committee, USSR Gosnab, and the USSR Ministry of Construction of Heavy Industry Enterprises.

The essence of the system consists of the following. All the material resources of the trusts are concentrated at the bases and warehouses of Murmanskglavsnab, which has assumed all functions pertaining to the comprehensive delivery of supplies to construction in the oblast. Materials and products are delivered to the projects in a centralized manner, directly from these bases and warehouses in accordance with weekly and daily schedules agreed upon with the builders. The supply services of the trusts, the DSK [Home-Building Combine],

and the SMU operating parallel with the Murmanskglavsnab organizations have been eliminated, and their fixed capital, labor jurisdictions, operating reserves, etc. have been transferred to the Murmanskglavsnab organizations. The trusts retained only the functions of determining the needs, distributing the funds, hiring personnel for the projects, and working out schedules. Specially created personnel departments are now engaged in these matters in the trusts.

At the base of the abolished UPTK of the construction trusts, as well as those of the previously existing commodity departments, the following cost-accounting, specialized sub-divisions have been organized in the main administration: Murmanskstroysnabsbyt /Murmansk Administration for Construction Supply and Sales/, Monchegogorsk UPTK, and the Zapolyarstroysnab /Polar Region Construction Supply Administration/ Office.

Correspondent: How did the work proceed on restructuring the system?

B. Demidenko: Glavmurmanskstroy handed over to our material and technical supply administration 293 personnel units of workers of the main supply administration, 26,000 square meters of storage areas, and approximately 2.5 million rubles of working capital. It seemed to many persons at the beginning that the "loss" of the warehouses by the trusts would make the work of the construction sub-divisions more difficult and make them dependent upon the caprices of the suppliers. But these dangers proved to be in vain, inasmuch as now the builders themselves determine their own needs, and our specialized administration merely carries out their orders.

Furthermore, we have undertaken a number of measures for introducing the up-to-date technology of warehousing materials, mechanization of operations, and raising the level of utilizing storages areas. As far back as 1970 all materials with the same designation were concentrated in specialized storage areas; 12,800 pallets, 1,300 containers, and 4,100 units of metal shelving were manufactured. The coefficient of using the storage areas tripled. In the loading and unloading operations 28 electric, fork-lift trucks were used, and this allowed us to eliminate one of the three loading and unloading sections in Murmansk and a section in Nikel, as well as freeing up about 100 persons, i. e., more than a fourth of the personnel taken over from Glavmurmanskstroy.

The technical degree of equipment of our sub-divisions has constantly grown. They already have in circulation now 22,500 pallets and 5,845 containers; 18,400 units of metal shelving have been installed in the warehouses and at the bases. The pool of load-hoisting machines numbers 124 units.

The warehouses now constitute a unique kind of rear-line enterprise for the construction projects; extensive use is made here of the means of mechanization, while all the required conditions for storing materials have been created. It could be said that a genuine industrialization of the warehousing system has occurred, and the standards of work have gone up immeasurably. All kinds of materials are stored in specialized rooms or in well-equipped areas. The warehouses contain multi-tiered shelves, containers, and pallets. The materials are moved not by hand, as was the case before, but with the aid of cranes, truck-mounted loaders, power trucks, and other machines. The level of

the mechanization of loading and unloading operations has risen by more than a third and now amounts to 87 percent.

Correspondent: How is the new system being carried out in practice?

B. Demidenko: On the 25th of every month the departments in charge of making deliveries of complete sets to trusts present schedules of the shipment of technical materials for the following month. These schedules indicate the names of the materials in a specific form, the amount, and the project and day of the delivery. On the 25th and 26th in the commodity departments of Murmanskglavsnab's specialized administrations the schedules are checked against the stocks, the presence of the materials in the warehouses is ascertained, along with anticipated incoming shipments. Then, after approval by the supervisory officials, documents are drawn up for the release of the materials and their delivery to the customers within the agreed-upon time periods. If the trusts have provided good grounds for an increased need, the delivery of the materials is advanced with a subsequent crediting of the resources. The documents together with the schedule are sent to the bases and to the operational-dispatcher department for verification. At the bases commodity-transport documents are drawn up, and the goods are prepared for shipment to the construction-installation sites.

On the day indicated on the schedule the materials are delivered to the project by a driver-expeditor. The goods are delivered by trucks equipped with radio telephones; receiver radio stations have been set up at the bases. The fact of the goods being received at the project is certified by the signature of a responsible official and a stamp.

In case the course of the operations is delayed or by virtue of some other production necessity there is a change in the schedule, the dispatcher of the construction trust, after officially making the appropriate notation in a special journal, informs the dispatcher of the commodity administration about the postponement of the shipment day. Changes in the schedule are accepted no later than 24 hours before this day. In an analogous way materials are shipped which are subject to transfer to sub-contracting organizations.

Correspondent: What organizations of the oblast are being supplied in accordance with the new system?

B. Demidenko: The Murmanskzhilstroy, Murmanspromstroy, Kol'stroy, Olenegorskiyazhstroy Trusts, the Murmansk DSK, the Remstroymash Plant, the Stroykonstruktsiya Combine, the Zapolyarnenskiy, Monchegorskiy, and Olenegorskiy Reinforced-Concrete Products Plants. Of the total volume of construction and installation operations in the sum of 224.5 million rubles carried out by the Glavmurmanskstroy, 132.3 million are accounted for by these organizations.

Now we intend to convert to the new system of supplying the Apatitstroy and Kovdorstroy Trusts, as well as the Apatitskiy and Kovdorskiy Reinforced-Concrete Plants.

Correspondent: It seems evident that delivery of complete sets of supplies to a DSK requires a special approach. Is that right?

B. Demidenko: Certainly. The broad scope of multi-storey home-building in Murmansk and the conversion of housing construction to the assembly-line method have required more-improved forms of supply, ensuring the synchronization of deliveries with the installation of projects. For this purpose, standard schedules for the delivery of technical materials have been worked out for each series of houses. They have specified everything necessary for each day of installation, as well as the type of container for supplying a complete set of materials. Furthermore, they are closely connected with the network construction schedules.

The container with the calculated amount of materials is delivered to the project on the installation days, as strictly specified by the schedule.

The reciprocal action between contract and supply is organizationally ensured in the following manner: upon completing operations of a zero cycle, the home-building combine sends us a special "signal," which indicates the planned deadline for the beginning of work on erecting the house, along with data on hoisting machinery and approach roads at the project. This "signal" is a document, on the basis of which all the supply services begin to deliver the necessary structural components and materials.

Correspondent: What are the principal advantages of the existing system?

B. Demidenko: A brief answer could be given as follows: it has become possible to provide greater volumes of delivery with less resources.

This yields a mass of advantages. Above all, objective conditions have appeared for a high turnover rate of valuable items, for the most part, basic building materials and products.

They are renewed as many as 6--8 times a year--a task beyond the capabilities of the UPTK's of even large construction trusts.

The relatively limited nature of the resources of a single UPTK does not permit the maintaining of reserves in a constantly wide assortment and, thus, the reliable guarantee of supplies. But increasing the reserves inevitably slows down the turnover rate of funds, freezes them, and, therefore, worsens the financial condition of the construction organization.

The new form of organizing the delivery of supplies to construction projects has allowed us to reduce the leftovers of material valuables and free up a portion of the working capital. Now the construction sub-divisions, even when regularly over-fulfilling the plan, are contained within the fund norms.

Substantial changes have also occurred within the supply service itself. Thanks to the rise in the level of labor organization, along with the mechanization of loading, unloading, and warehousing operations, 115 persons have been freed up, or 23 percent of the number of workers received from the construction organizations. The standard savings on the wage fund have amounted to 250,000 rubles.

Providing the construction projects with supplies of materials directly from the UMTS /Material Technical Supply Administration/ bases yields a great economic effect. Reducing the losses of materials in carrying out loading and unloading operations, transport, and storage allows us to save more than 100,000 rubles per year. Furthermore, the difference between today's warehouse mark-up, as raised by the Murmanskglavsnab organizations, and the previous de facto working expenditures in the former UPTK's and KMT's /Offices of Material and Technical Supply/ yields an annual saving of 800,000--900,000 rubles.

On the whole, 12 years of operating in accordance with the new system have provided, according to our calculations, a saving of funds totaling more than 15 million rubles. And, finally, the most important thing. Concentration at specialized warehouses and bases of the principal mass of reserves of building materials has allowed the UMTS to effectively switch about resources, to uninterruptedly and smoothly ensure construction production. The precise delivery of goods has provided for smooth operations at the sections of construction superintendents. There has been an increase in labor productivity. Foremen and construction superintendents, having freed themselves from concerns connected with "scraping up" materials, are paying more attention to the organization of operations and their quality.

Also of great importance is the moral factor--the builders' confidence in the unconditional guarantee of delivery of material resources to the construction projects. You know, the new supply system guarantees the smoothness of deliveries, facilitates the introduction of advanced technology of construction production, and, of course, the integrated, flow-line type of brigade contract.

Correspondent: The trust UPTK's accord a great deal of attention to increasing the plant manufacture of products and materials; they have transferred many operations to the production workshops. How is this problem being solved under the new system?

B. Demidenko: The Murmanskglavsnab has actively sought out new ways to reduce expenditures and speed up construction. Today construction projects need not simply supply materials in the necessary amounts and at the specified times; they need materials possessing a high state of readiness for installation. For this purpose we organized workshops in our own sub-divisions for rendering additional services. Carried out here today is the welding of linoleum floor coverings, the manufacture of small blocks for large-panel home construction, the cutting of glass according to the dimensions assigned, the manufacture of drains, moldings, and other items made of roofing steel, the preparation of tints, spachtlings, pastes, lubricants, the making of strap-type slings, the cutting to order of floor boards, and packaging them in sets with bolsters, making up sets of carpentry items, etc.

These services yield an annual savings to the builders amounting to 500,000 rubles.

There is also more extensive delivery of materials to projects in returnable containers and pallets. More than 10 types of containers have been developed in which soft roofing materials, radiators, ceramic and facing tiles, glass

and glass blocks, cast-iron sewer pipes, section-shaped joining parts, bricks, and other products are delivered directly to the projects.

With the conversion of the Murmansk DSK to the new procedure of ensuring deliveries, the expansion of services has proceeded along the line of delivering individual materials in sets for a room, apartment, or section, as well as items with an increased degree of readiness for installation. Thus, taking into account the serial nature of the houses being erected in Murmansk, Murmanskstroysnabsbyt makes up 21 packages of carpentry items and floor boards, designed for a room, apartment, or section, and delivers these packages in containers to the installation sites.

Also delivered to the DSK workshops and the projects in a state of readiness for installation are packages of rock-wool panels, tin items (drainpipes, moldings, cases of air ducts, etc.), structural and ornamented glass, cut to the dimensions ordered, slate for balcony railings, tints, spachtlings, etc.

By special agreement a procedure for returning the containers by passing transport has been set up. In case they are held up in excess of the agreed-upon time period, they are returned by the transport means of the construction administrations.

Correspondent: Here it has already been more than 12 years that complete sets of items have been delivered to the construction projects directly from the Murmanskglavsnab bases. During this period, of course, problems hindering the system's further development have been ascertained, and ways have been outlined for solving them....

B. Demidenko: Yes, there are quite a few difficulties. For example, our experiment at providing material and technical supplies to the construction projects was approved by the Murmansk Obkom of the CPSU and supported by USSR Gossnab. Its advisability is also borne out by practical experience, which has demonstrated the advantages and effectiveness of the new method. However, its further, broader introduction is occurring rather slowly.

The USSR Ministry of Construction of Heavy Industry Enterprises is allotting the Glavmurmanskstroy material resources with a calculated norm of 1 million rubles of SMR [Building Material Resources], taking into account the decreasing adjustment coefficients, but without taking into account the projects and work volumes being planned de facto. This leads to a situation whereby in certain areas there is an excess of stocks (slate, non-standard sheet metal, ordinary-quality wire), while in other areas there are obviously not enough of them (galvanized steel, cast-iron sewer pipes, etc.). In our opinion, the limit of the resources should be determined by the consumer, in conjunction with the territorial organ of USSR Gossnab, and they should be acquired in complete accordance with the planning and estimate documentation and the approved plans for the SMR.

Furthermore, in order to determine the needs for material and technical resources in accordance with the plans and estimates, the construction organizations should have within the body of the plan for each project information about the required materials, items, and structural components with their

distribution as to the time periods of delivery in accordance with the plan of the construction organization. Today there are no such limit charts, and this undoubtedly complicates the supply and monitoring of the effective and economical expenditure of material resources.

And there is still more. In our opinion, there must be a strengthening of the material motivation on the part of suppliers for constantly improving the "feeding" of construction projects. For example, we should transfer to the supply organs that portion of the bonuses which previously used to be received by the workers of the UPTK trusts. For this to happen, only the agreement of the construction ministries is required. But for some reason they have been slow in deciding what would seem to be an obvious question.

Nevertheless, I think that these problems can be solved. Our experiment in supplying complete sets to construction projects, an experiment which has given an outstanding account of itself not only in Murmansk Oblast but has also undergone "polishing" at many large-scale construction projects, will find widespread dissemination.

At the June Plenum of the CPSU Central Committee, among other top-priority tasks, the intention was stated of "ensuring the well-adjusted, unceasing operation of the entire economic mechanism...." Our experiment has undoubtedly pointed toward a solution of this problem. At least the facts bear witness to the fact that the high economic effectiveness of the system has facilitated a considerable rise in the level of the construction production organization.

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Statute on Construction Organization

Moscow STROITEL' in Russian No 9, Sep 83 pp 8-9

[Article containing "Provisional Statute on Procedure for Planning and Carrying Out Economic Experiments in Construction"]

[Text] Designated at the November (1982) and June (1983) Plenums of the CPSU Central Committee as being among the chief tasks was the necessity for the most rapid possible introduction into production of the achievements of science. Further increase in the effectiveness, for example, of capital construction is connected, to a considerable degree, with improvement in the administration of the sector and with the search for new economic solutions. It is correct to say that an experiment conducted on a scientific basis is the prologue to a rapid and widespread introduction into practice of up-to-date scientific developments.

The VNIPI [All-Union Scientific Research and Planning Institute] for Labor in Construction of USSR Gosstroy, on the basis of a study of practical experience, has worked out a Provisional Statute on Procedure for Planning and Carrying Out Economic Experiments in Construction, the use of which will facilitate improvement of this sector's economic mechanism.

1. General Positions

1.1. The economic experiment is a test verification--scientifically set up under precisely considered conditions--of proposals presented in the form of approved methodological documents (methodological directives and recommendations) with regard to improving the economic mechanism and organizational structures of administration in the sector.

1.2. The object of this experimental verification consists of proposals regarding the improvement of the economic mechanism or its elements, the organizational structures of administration and the methods of economic mutual relations among the participants in construction.

1.3. The economic experiment is being carried out with the following goals in mind:

1.3.1. To determine the influence of the proposals being recommended with respect to reducing the length of time required for construction, the increase in labor productivity, product quality, the efficient utilization of production stocks of material, labor, and financial resources, intensifying the savings system and eliminating losses in construction, manifesting the stimulating role played by the price forms of wages, etc.

1.3.2. To accumulate experience in applying the proposals being experimented upon and to reveal the conditions for the widespread introductions of innovations into construction practice.

1.3.3. To complete the processing of the necessary methodological and normative documentation, including the establishment of the nature and contents of the changes in the legislative acts.

1.4. The procedure for preparing, planning, and carrying out economic experiments in construction pertains only to those tests the conditions for conducting which must be approved in the Union organs.

2. Procedure for Presenting and Selecting Proposals for the Plan

2.1. Proposals for conducting economic experiments may be presented by all participants in construction: construction-installation organizations and those equivalent to them, customers, enterprises of the construction industry, mechanization, and truck transport, planning and scientific-research organizations, main administrations, individual persons, as well as construction ministries and departments, and the Gosstroy's of Union republics.

2.2. Depending on the essence of the economic test, the proposals are sent to the following pilot scientific-research institutes of USSR Gosstroy: the VNIPI of Labor in Construction (107078, Moscow, B-78, Novaya Basmannaya, 21), the NII of Construction Economics (117331, Moscow, B-331, Vernadskiy Prospect, 29).

2.3. Selection of proposals is based upon their timeliness and prospects, to be determined by the principal thrusts of the plan for the economic and social development of the sector.

2.4. A proposal must set forth the following: the object, purpose, problems, and conditions of the experiment, with an indication of the hypothesis of the innovation along with its proposed effect.

2.5. Preliminary examination of the proposals is carried out by a department or group of specialists of the pilot institute, with the involvement of workers from the construction ministries, organizations, and enterprises concerned.

2.6. All proposals regarding the conduct of economic experiments are examined in the Learned Council (Section) of the pilot economic scientific-research institute in accordance with its specialization structure.

2.7. The Learned Council (Section) reaches a conclusion regarding the feasibility of carrying out the test, the facilities for conducting it, and the limits of experimentation. Herein it is taken into consideration that complete amounts of data on certain proposals frequently may be obtained only after the conduct of the experiment itself.

2.8. Differences of opinion which come up during the course of discussing the proposals in the Learned Council of the institute are referred for a decision to the appropriate department of USSR Gosstroy.

3. Development and Examination of Methodological Materials

3.1. A positive conclusion by the Learned Council of an institute or the approval by a department of USSR Gosstroy with regard to a proposal which has been presented constitutes the basis for developing the methodological materials of an economic experiment.

3.2. Methodological materials must include the following:

- a draft of the methodological directives with a detailed exposition of the essence of the test;
- an explanatory note with an elucidation of the problems;
- status of the problem;
- goals and tasks;
- facility for experimentation;
- a working hypothesis of the innovation and its effectiveness;
- a calendar plan for conducting the test;
- a plan for coordinating the participants in the experiment;
- methodology for analyzing the results of the experiment;
- a form for completing the work.

3.3. The draft of the methodological materials of the experiment being conducted upon the proposal of the initiator is worked out by the authors in conjunction with the workers of the appropriate department of the pilot institute.

3.5. The topic of the developed draft for the methodological materials of the economic experiment is included in the sectorial programs as well as the five-year and one-year plans for the scientific-research work of the pilot institute.

3.6. The topic of the prepared draft for the methodological materials of the economic experiment is financed by means of budget allocations.

3.7. The draft for the methodological materials is examined in the Learned Council of the pilot institute in conjunction with representatives from the concerned construction ministries, departments, and the Gosstroy's of the Union republics for the purpose of approving or rejecting it.

3.8. Differences of opinion which arise during the course of discussing the methodological materials are examined by the leading officials of the appropriate department of USSR Gosstroy.

4. Coordination and Confirmation of Methodological Materials

4.1. The drafts for the methodological materials are presented by the pilot institute to the appropriate departments or administrations of USSR Gosstroy.

4.2. The department of USSR Gosstroy, in conjunction with the institute, carries out the preliminary coordination of the draft for the methodological materials along with Union committees, ministries, as well as the appropriate construction and other organizations.

4.3. The methodological materials, together with any possible differences of opinion, are sent by USSR Gosstroy to the MVK [Inter-Departmental Commission] under USSR Gosplan. They must contain a draft of the methodological directives, an explanatory note, the decision of the NII Learned Council and that of USSR Gosstroy, and the draft of the decree by the MVK under USSR Gosplan with regard to the confirmation of methodological materials.

4.4. The methodological materials, as confirmed by the MVK, are sent to the pilot institute and to the other participants in the experiment.

5. Plan for Carrying Out and Implementing the Experiment

5.1. The topics of carrying out the economic experiments after the receipt of the confirmed methodological materials are included in the sectorial programs, the five-year and one-year plans of the pilot institute's scientific-research projects.

5.2. The topics of carrying out the economic tests are financed by means of budget allocations.

5.3. After the confirmation of the one-year plan of scientific-research projects the pilot institute, in conjunction with the co-performers, draws up a working program for carrying out the experiment, a program which makes provision for the following factors:

a procedure for organizing personnel training for the participants in the experiment;
calendar time periods and sequence of implementation of individual projects for the entire experiment;
a consolidated plan for carrying out individual projects, a list of assignments for the performers with an indication of the time periods, costs, and types of materials to be presented.

5.4. Carrying out the experiment is ensured by the concerned organizations of the sector under the methodological supervision of the pilot institute and the co-performers.

5.5. The successful conduct of experiments is facilitated by the holding of seminars and conferences, inspections and exhibits, the creation of consultation centers, the publication of information sheets, articles in the periodical press, etc.

5.6. Analysis of the progress and results of the experiments is conducted on the basis of a simultaneous presentation of statistical reports on existing and specially developed forms. The work is organized by the economic services of the participants in the experiment, and the materials of the analysis are presented to the pilot institute.

5.7. The results are evaluated by means of comparing the respective indicators before and after the experiment, as well as comparing control objects with the ones being experimented on. As a result, the necessary conditions are being defined which will determine the positive influence of the economic experiment on economic activity.

5.8. The pilot institute and the co-performers regularly, at least once a year, examine the results of conducting the economic experiment. The institute reports the results of the examination to a department of USSR Gosstroy.

5.9. During the course of an experiment the pilot institute and the co-performers may make proposals regarding the improvement of its conditions. Proposals which alter the initial essence of the test must be approved in the procedure set forth above.

5.10. The results of conducting the test are reported by the pilot institute to the department of USSR Gosstroy. The report sets forth the essence of the test, a brief characterization of its results, and the appropriate recommendations. Both positive and negative test results are important for further improving the economic mechanism and the organizational structures of an administration. The pilot institute executes an account of the results of experiments.

5.11. Proposals with regard to improving the economic mechanism and the organizational structures of the administration in this sector, verified in a test procedure and evaluated positively, constitute a reserve for the inclusion in the draft decrees of the directive organs in the interests of universal introduction.

5.12. The procedure set forth above for preparing, planning, and carrying out tests is also being extended to comprehensive economic experiments.

CONSTRUCTION PLANNING AND ECONOMICS

NEW APPROACHES TO CONSTRUCTION ECONOMICS ADVOCATED

Moscow EKONOMIKA STROITEL'STVA in Russian No 10, Oct 83 pp 3-7

[Article: "Actively Formulate a New Type of Economic Thinking"]

[Text] The decisions of the June (1983) Plenum of the CPSU Central Committee and the speech at the Plenum by the General Secretary of the CPSU Central Committee, Comrade Yu. V. Andropov, set forth universally well-grounded tasks, aimed at the immediate and long-range future, in the cause of building communism, forming the new man, in the struggle for peace and social progress. Outlined here was an extensive program of specific, practical measures, called upon to intensify the ideological-political and moral tempering of Soviet people, as well as to ensure the further upswing of their cultural level. Occupying an important place among these measures is the task of actively forming a new type of economic thinking, aimed at initiative and at the socialist entrepreneurial spirit, at increasing responsibility and the creative search for ways leading to the best end result for the national economy with the least possible expenditures.

This task is likewise extremely urgent for capital construction, where the prerequisites are being created for implementing the achievements of scientific and technical progress in the national economy. During the first six months of the current year alone the putting into operation of fixed capital by means of state capital investments exceeded 36 billion rubles, which is 2.9 billion rubles more than during the first six months of last year.

State capital investments, which reached 57.9 billion rubles, increased by 3.5 billion rubles in comparison with the first six months of 1982. The commercial construction output of the construction-and-installation organizations amounted to 21 billion rubles. Its increase over the comparable period came to 8 percent, while that of the volume of contracting operations was 4 percent. Labor productivity grew by 2.8 percent.

Along with certain positive shifts which have taken place recently in construction, there are still quite a few problems and shortcomings. Thus, the organization of construction production is still being perfected too slowly; many contracting organizations are still not coping successfully with the plans for construction-and-installation work or the putting into operation of start-up projects. The second half-year is the most intensive, requiring the maximum concentration of efforts and funds to ensure the 1983 start-up

program, along with the putting into operation of production capacities and projects of top-priority importance. Moreover, it is absolutely necessary to fulfill the plans for housing and cultural-everyday-service construction in accordance with the decree of the CPSU Central Committee adopted with regard to the given question.

Particular attention must be accorded to construction projects linked with the solution of the major national-economic problems, as defined by the 26th CPSU Congress. These include construction of projects for the agro-industrial complex, increasing the capacities for producing mineral fertilizers, manufacturing farm machinery, the food and processing sectors of industry, stepping up work with respect to rural construction, particularly in the Non-Chernozem Zone of the RSFSR. It is also necessary to overcome as rapidly as possible the lag in building enterprises of ferrous and non-ferrous metallurgy, the fuel-and-energy complex, as well as in the development of capacities for turning out consumer goods.

The main thrust with regard to carrying out the above-indicated tasks comprises the following: a considerable expansion of the scope of retooling and renovating operating enterprises, a broad-based introduction of the achievements of scientific and technical progress and advanced experience in construction, economizing on labor and material resources, increasing the responsibility of personnel for the task entrusted to them, strengthening labor and performance discipline, and improving political and educational work in labor groups.

A no-less important task is the mastery by this sector's workers of economic theory and methods of effective management at the stage of developed socialism. Its solution must be the target of efforts by the labor groups of the construction organizations and administrative organs, scientific and educational institutions, the leading officials and specialists of this sector, propagandists of the economic educational system, the sectorial press, and other mass information media.

The requirement for carrying out this work actively stems from the dynamic nature of the present-day economy, the enormous scope of production, the need to increase the effectiveness of all sectors of the national economy, product quality and work.

Labor groups are called upon to exert a decisive influence on the formation of a new type of economic thinking. The sector has quite a few examples of a creative approach to the task at hand, a purposeful, painstaking, day-to-day activity with regard to improving production, a fine-tuning of the elements of competent management, which finds its expression in the posing of economic work. This includes the widely known Belorussian experiment, the Orlov "continuous action," the centralization of administrative functions, the integrated flow-line brigade contract of the Tallinn home-builders, the junctional method, which emerged on the construction projects of the Ukraine, non-schedule wages, the participation of the builders in planning, and a great deal else. The outstanding characteristic of these and other initiatives is a lofty feeling of responsibility for the entrusted task on the part of

progressive groups of builders, their constant striving to search for the new, an understanding of the unalterable fact that the economy does not work automatically through laws and indicators, that it requires the systematic, purposefully organized activity of all employees--ranging from managers to ordinary workers. Examples of such an approach are widely known in this sector. And all of them testify to the fact that there where initiatives emerge people do not set their hopes on directives from above; they do not wait for someone to figure things out from the sidelines and give them hints as how best to act, but rather they seek out the best ways to solve their own problems independently, manifesting persistence and high principles, not yielding when confronted with difficulties.

Thus, for example, it is a well-known fact that it is not easy to achieve a smooth turnover for operation of housing during the course of a year. What is required here is not only an adjusted, long-term construction engineering flow line, but also the overcoming of a definite psychological stereotype: it is difficult to refrain from the temptation to "turn over" at the end of the year an "almost ready" house, designated for introduction in accordance with the plan for January of that of the first quarter of the next year. But now in the practice of many advanced home-building groups--from Moscow, the Ukraine, Estonia, and elsewhere--this problem has been solved and removed from the agenda. This was a victory of persistence and engineering principles, which did not allow anyone whatsoever from the outside to interfere in the technology of construction. In the final analysis it was a victory of collective economic thinking. One could cite many organizations whose management methods have the inherent characteristics of economically competent thinking. These include the following groups which are well known in the country: the Tallinn and Belotserkovsk DSK's [Home-Building Combines], the Vinnitspromstroy Combine, and a number of groups within the system of the USSR Ministry of Industrial Construction which have adjusted their economic work well; among the latter are Trusts No 8 of the BSSR Ministry of Industrial Construction, No 4 of Glavarkhangel'skstroy, Bashneftezavodstroy of Glavbashstroy, Promstroy Mechanization of the AzSSR Ministry of Industrial Construction, and a number of others.

It is feasible to study the experience of these and other organizations with regard to the operational and five-year planning of work, the organization of intra-structural cost accounting, bookkeeping and accountability, improving payment-and-financial discipline, increasing labor productivity, economizing on resources, reducing the cost of construction-and-installation work, etc.; we should also introduce this experience in a broad-based manner into the practice of economic work in construction.

The construction ministries have been called upon to assist all the sub-departmental organizations and enterprises in mastering well-recommended forms and methods of setting up economic work in this sector, to arrange an inter-ministerial exchange of advanced experience in this sector. And this must be done, as was pointed out by the June (1983) Plenum of the CPSU Central Committee, somewhat more rapidly, inasmuch as delays and red tape in disseminating advanced experience are the same as economic losses and, on a country-wide scale, are extremely tangible.

In his speech at the Plenum the general secretary of the CPSU Central Committee, Comrade Yu. V. Andropov emphasized the following: "...to ensure the well-arranged, uninterrupted operation of the entire economic mechanism--this is both the requirement of the present day and the program task for the future. This is a constituent part of the overall process of perfecting our social system."

The party and the government have worked out a system of measures for improving the economic mechanism. In the sphere of capital construction these measures encompass the questions of improving the administration of capital construction and construction production, planning and estimating, planning capital construction and construction production, material and technical provisions, price formation, finance-credit relationships among the participants in construction, cost accounting, providing incentives and wages for workers in this sector. The distinguishing characteristic of the measures indicated above is their comprehensive nature, which also predetermines their effectiveness. However, and this has been pointed out on several occasions by the directive organs, implementation of the positions contained in the well-known party-and-government decree with regard to improving the economic mechanism is not being carried out in a satisfactory manner.

As Comrade Yu. V. Andropov pointed out in his article entitled "The Doctrine of Karl Marx and Certain Problems of Building Socialism in the USSR," "Moving to the forefront today is the task of devising and consistently carrying out measures capable of providing large scope of action to the colossal creative forces contained within our economy. These measures must be meticulously prepared, realistic, and so, in working them out, we must unwaveringly proceed from the laws of the development of the economic system of socialism... avoid any kind of attempt to administer the economy by methods which are alien to its nature.... On the other hand, having agreed upon the necessary measures and having adopted the appropriate measures, it is inadmissible to abandon the cause halfway through. Everything which has been decided must be carried out. This is the Leninist tradition of our party, and it is not becoming to us to retreat from it."

It is understood that the precise and complete execution of the statutes, instructions, and methodological directives worked out in fulfillment of the decisions taken with regard to improving the economic mechanism constitutes that foundation on which the economic thinking of managers, specialists, and workers is being formed. And, in contrast, the violation of the principles contained within the complex of measures regarding improvement of the economic mechanism and the ignoring of the laws of production cannot fail to affect the attitude of workers toward the economy.

During the period after the adoption of the above-indicated decree the sector's specialists studied its statutes and learned how the individual elements were inter-acting. Thus, for example, the decree emphasizes particularly that the plans for construction-and-installation work ought to be

balanced with the material-technical, labor, and financial resources, as well as with the capacities of the construction organizations.

The decree also establishes that one of the conditions for ensuring the uninterrupted operation of the plans for capital construction, on-schedule putting into operation of production capacities and projects, as well as bringing the amounts of unfinished construction into accord with the norms is working out the title lists of construction projects with a break-down of assignments by years; these must be the unchanging plan documents for the entire period of construction. But in the practical experience of planning the above-indicated title lists have still not found wide acceptance, for which direct responsibility is borne by the ministry-clients, the planning and monitoring organs. The situation is also analogous with regard to the questions of a good balance between the plans of the contracting organizations with the deliveries of resources and their capacities.

It is likewise high time that we solved a number of important economic problems so as to, in fact, ensure the possibility of manifesting a socialist entrepreneurial spirit and creative initiative in management. Thus, it is absolutely necessary to abandon the petty concern of construction organizations in the matters of the structure of the administrative apparatus. In his speech at the June (1983) Plenum of the CPSU Central Committee Comrade Yu. V. Andropov pointed out the need to reduce and simplify the administrative apparatus. One of the ways to implement this directive could be the establishment of a long-term, for example, a five-year, unchanging norm with regard to the wage fund of the administrative apparatus, depending on the operational program. But the choice of this apparatus's structure under the specific conditions of production--the scattered nature of construction, the number of related industries, etc.--as well as the definition of the specific duties of the workers, depending on the administrative functions and the actual skills of the personnel--must be a matter for the labor group itself. In the opinion of the specialists and managers of construction organizations, such an approach promises considerable gains both in the number of personnel as well as in wage funds. The deciding voice here is that of the USSR Ministry of Finance and that of Goskomtrud /State Committee for Labor and Social Problems/.

Nor can we afford to postpone the question of bringing the wage-rate system in construction into line with present-day conditions. Establishing an effective wage-rate system means a decisive struggle against the levelling factor in workers' wages and against the serious violations in setting norms which take place. Here everything must be directed at solving the key problem in the economic sphere--a major increase in labor productivity. The June (1983) Plenum of the CPSU Central Committee specifically asserted that now, under the conditions of the scientific and technical revolution, this problem has assumed particular importance both for our domestic construction as well as on the international level. For capital construction, which has not fulfilled the task assigned by the five-year plan with regard to the growth of labor productivity, this problem is a particularly pressing one. And the retarding factor here is precisely wage levelling. Just take the following well-known example: labor productivity in builders' brigades working on the basis of contract agreements during the five-year plan just past increased by

28 percent, as contrasted with approximately 2 percent in the remaining brigades. But the wage level in these cost-accounting brigades was only 2.5 percent higher than in the remaining brigades. It is undoubtedly true that the precise, skillful organization of people's labor and its wages, combined with conscientious discipline and a creative attitude toward work, is a powerful lever for lifting labor productivity.

The practical operational experience of the construction organizations under the conditions of the activity of the new financial-credit mechanism has also revealed possibilities for its further improvement. What we are talking about is that the bank enter upon a role not only as a monitoring organ but as a genuine partner of the builders. And, of course, it is precisely at partnership in carrying out the principal task--putting into operation production capacities and construction projects--that the policy of replacing clients' advance payments by banking credit is aimed. To what extent, for example, can we put up with a situation whereby a construction organization, despite common sense, is not extended credit by the bank because of the fact that a client has not paid funds on schedule for financing its own capital investments?

-Such an abnormal situation has come about, unfortunately, even on model construction projects. For example, Trust No 35 of Glavzapstroy [Main Administration for Construction in Western Regions] of the USSR Ministry of Construction, the contractor for a model construction project--the Izhorskiy Plant--has found itself in the above-mentioned situation on several occasions. The builders also suffer in the case of delays in granting credit by the bank, when they are not at fault. A great deal could be done by the bank likewise, in case of a delay in putting projects into operation through the fault of the clients, sub-contractors, and suppliers, by acting as a state auditor.

The June (1983) Plenum of the CPSU Central Committee pointed out the important role to be played by the economic education and training of workers in the questions of forming the new type of economic thinking. "...We have still not sufficiently studied the society in which we live and work," Comrade Yu. V. Andropov stated in his speech at the Plenum, "nor have we fully revealed the principles inherent in it, particularly the economic ones. At times, therefore, we have been compelled to operate, so to speak, empirically, by the extremely irrational method of trial and error." This situation is also urgent for capital construction. Here, in accordance with the requirements of the party, it is necessary that there be a decisive turning of the scientific institutions toward realistic, practical tasks, toward the new problems which life has moved to the forefront.

New problems must also be solved by the entire system of training specialists for construction. We need to improve the economic training of students in construction VUZ's and tekhnikums, as well as students of the system for upgrading skills and economic education, along with work on the vocational guidance of young people. There is a great role to be played by the ongoing economic self-education of this sector's managers and specialists, as well as the activists in public organizations.

The results of the June (1983) Plenum of the CPSU Central Committee constitute a new and vivid manifestation of the Communist Party's businesslike Leninist approach to solving the vital problems of the present-day phase of our society's development, a testimony to the monolithic solidarity and unity of the Communist Party and the Soviet people. Implementation of the party line aimed at improving developed socialism will allow us to take a big, new step in building communism. The honorable duty and obligation of the builders is to make their own contribution to the common cause of strengthening the country's economy.

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CONSTRUCTION PLANNING AND ECONOMICS

NEW FINANCING PROCEDURES REQUIRE TRUST REORGANIZATION

Moscow NA STROYKAKH ROSSII in Russian No 9, Sep 83 pp 24-25

[Article by A. Sal'nikov, chief of SMU-3 [Construction and Installation Administration-3], Trust No 1, Glavul'yanovskstroy, USSR Ministry of Construction: "The Structure of the Trust under the Conditions of Planning Volumes of Commodity Construction Output"]

[Text] The principal thrusts of the USSR's economic and social development for the years 1981--1985 and for the period until 1990 have been provided for by the radical restructuring of capital construction administration. One of the ways for further increasing construction effectiveness is the development and introduction of general administrative systems with the goal of further improving the scientific-economic methods of administering construction production. Summing up the operating experience of a trust under new economic conditions and a profound analysis of its activity in accordance with the new evaluative indicators has given us the opportunity to correctly determine the effect of restructuring the work of the construction and installation trust as a whole and to eradicate the existing serious shortcomings. The new evaluative indicators require changes in the traditional structure of the trusts, as well as a restructuring of planning and accountability methods.

Taking their bearings from the commodity construction output, the construction and installation trusts and the DSK's [home-building combines], engaged in carrying out the one-year program with regard to industrial and housing specialization, chose to follow the course of continuous planning and flow-line construction. But how are those trusts to operate which do not specialize in a particular type of apartment house, structures, and industrial facilities and which are, in their majority, not standardized, having diverse outlays of labor and time for erecting projects?

On the one hand, this circumstance considerably complicates the calendar planning and the load of the SMU (SU) [construction and installation administration (construction administration)], while, on the other hand, it compels us to conduct a search for the optimum variants of the administrative structure, directed at the rational distribution of the production resources of the subdivisions and the time periods required for completing work on projects.

To say that all trusts, having an enormous diversity of projects and structures, operate efficiently under the conditions of the new system of planning

would mean to distort the truth. Let's leave aside for the time being an analysis of the economic and socio-psychological aspects of the process which takes place in the labor groups of a trust, orientated toward commodity construction output, and let's elucidate the "structural bottlenecks" which hinder them from operating effectively. And just what is it in the presently existing structure of the trust which makes it imperfect and not up to meeting the requirements of the times?

Above all, the presence of excessively weak construction organizations with their low technical-economic indicators. The construction and installation administrations (SMU's, SU's) have, as a rule, a limited amount of personnel resources, and this exerts an extremely substantial influence on the observance of construction schedules and the introduction of projects into operation. This "limiting factor" allows each SMU (SU) to erect projects by proceeding from their own possibilities and thereby unintentionally increase the length of time required for construction.

It is completely obvious that this is also the cause of the over-expenditure on machinery used at the projects, the increase in the amount of automotive transport, and the scattering of projects throughout the trust as a whole. In connection with this, very substantial difficulties in operation have been experienced by the administration of production-engineering recruitment, since it is simply impossible to recruit simultaneously for 40 or more projects. And if we take into account the fact that in each SMU the projects are not of equal value with respect to volumes of construction and installation work, then to create even a non-smooth flow constitutes a great difficulty.

But what solution is to be seen? Basing their efforts on the tried-and-true experience of flow-line construction, individual organizations are making an attempt to convert the SMU (SU) within the trust system to specialized flow lines on the basis of sub-divisions, which will engage in the non-stop performance of a specific type of construction, installation, concrete, and finishing operations with an assigned degree of intensity and a precise staff of performers.

Having enlarged and concentrated the brigades in one sub-division by fields of specialization, it would be possible to improve the administration of production and form the structure of the trust by proceeding from the construction-engineering flow lines. Taken as a basis is a project whose specifics are determined by the volume-planning and constructional solutions, as well as by the functional purpose. On this will depend the volumes of the construction and installation work, the cost and labor consumption of the engineering flow lines and the time required for the stages of construction. If, for example, the specialized flow line for performing the masonry operations turns out on a project to amount to a staff of 60--70 persons rather than 30, then the length of time required for this stage will be significantly less than the norm, provided, of course, that the correct technological complement of machinery is guaranteed and that the labor-intensive processes are mechanized. Thanks to such specialization, the construction SMU's (SU's) which have assumed the functions of performing a specific type of work with regard to all the structures being built by the trust will become enlarged sub-divisions, capable of independently carrying out serious tasks.

In this case, each construction flow line will already be concerned with completing its own operations on time and turning them over as rapidly as possible to the next group. In essence, this comprises an intra-trust, multiple-skill, engineering flow line.

Practical experience has long ago demonstrated the following: the level of output in specialized brigades is much higher than in composite ones. The very act of carrying out specialized operations creates the conditions for utilizing permanent equipment as well as improving technology; this will have an effect on reducing labor outlays and, thanks to improvement in the organization of production and labor--on the growth of output.

In principle, the variant solutions of flow-line technology can be diverse. Let's dwell on one of them. Brigades which are in one SMU (SU) will be assigned to a narrowly specialized program with a transition from project to project strictly according to schedule. There has appeared a practical possibility of ensuring an even-paced and smoothly coordinated delivery of building materials and structural components in accordance with schedules for completing sets, since the number of projects being erected at the same time in a trust is being reduced, while the intensity of the work is being increased. It is important to note the following: in this case the even-paced introduction of the facilities is guaranteed (in accordance with the one-year schedule of the trust's load), and the builders' worst bottleneck will disappear--toward the end of the year projects are ready, but there are simply not enough finishing workers. The engineering flow-lines become easy to administer: they are united by a common goal; the brigades will "hand over" the completed work, strictly observing the time periods required for each segment, while confining themselves within the total time of the "relay race." In essence, this is a trust conveyor belt, operating in accordance with the calendar plan for erecting projects with various purposes, calculated as to labor outlays and stable throughout the entire construction period.

Another factor facilitating improvement in the trust's administrative structure is the inclusion within its structure of individual "external" specialized sub-divisions. As a rule, the existing specialized trusts of Stroymekhanizatsiya and Spetsstroyemkhanizatsiya are poorly connected with the general-contracting organizations. An enormous number of mutual problems which could be completely solved at the trust level, which has within its staff a mechanization administration, at times require the intervention of the main administration. But, of course, the mechanization trusts must not simply carry out their own work on excavating the foundation pit and driving in the piles but the entire complex of operations, including the networks for the telephones, cables, gas, etc.

Inclusion of the mechanization administration within the general-contracting trust makes it possible to approach more operationally and, what is the main thing, more technically, the problem of introducing projects into use on schedule. And this is also confirmed by an economic analysis of the existing practice: the trusts of Stroyemkhanizatsiya obtain profits, while the general-contracting construction and installation organizations suffer losses.

Work under the new management conditions should lead to improvement in the financial situation of the contracting trusts, but this work must begin with the restructuring of the systems for administering the trusts, and particularly those trusts having projects with diverse plans. Certainly one of the tasks of a trust still consists in being able to make its payments and to have a large amount of working capital for the opportunity to independently make decisions aimed at radically improving its own activity.

The centralization of the trust's departments and services which has been carried out will allow us to ensure at the level of the trust's administrative apparatus the performance of all the necessary functions--ranging from the engineering preparation for construction production to the receiving of commodity construction output, while at the level of the sub-divisions--it will permit us to create a reliable system for organizing construction production in accordance with the engineering flow lines.

Under the conditions whereby commodity construction output has become one of the principal indicators of the activity of the construction and installation organization, the trusts have gained the opportunity of substantially raising the technical-economic indicators of their own sub-divisions as a result of the proposed restructuring. Now, when the construction organizations have unleashed an effort to seek out internal reserves for increasing labor productivity, such a restructuring of the trust administration has become vitally necessary.

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GOAL-ORIENTED COST ACCOUNTING APPLIED TO CONSTRUCTION

Moscow EKONOMIKA STROITEL'STVA in Russian No 11, Nov 83 pp 33-36

[Article by A. A. Bashirov, candidate of economic sciences, senior scientific staff-member: "On the Cost Indicators of Output Volume in Construction"]

[Text] The decree of the CPSU Central Committee and the USSR Council of Ministers, dated 12 July 1979, on improving the economic mechanism provided for a complex of measures aimed at concentrating capital investments and reducing the length of time required for construction. In particular, it was decided to evaluate the work of construction organizations by their end results.

In connection with this, a new concept has emerged--commodity construction output. Definition of the given concept comprises a rather complicated problem with regard to both theory and practice. All the more so in that, until recent times, there was a general denial of the commodity nature of construction output. Later it was recognized that this position is erroneous, since commodity construction output includes the cost of enterprises, complexes, and facilities which have been built and put into operation; there is no justification for denying the commodity nature of these items.

Of no less importance is resolving the question of whether or not we should include the cost of equipment in the price of the production facilities and enterprises which have been put into operation. Thus, Professor S. N. Reynin wrote that the category of price, as an instrument of buying and selling, is practically unusable for construction (EKONOMIKA STROITEL'STVA, 1975, No 4, pp 55--57). In his opinion, it can be extended only to "construction output" on buildings and other structures without machinery and equipment. Such a conclusion proceeds on the assumption that equipment is obtained by the client. Moreover, it does not take into consideration the fact that the indicated procedure could be changed. And, in fact, it is already beginning to be changed.

In the construction of a "turnkey" enterprise the obligation of the general contractor has come to include the function of accepting and paying the cost of the equipment. Therefore, the price of the construction project, which has been calculated by the client and the contractor, in this case, includes the cost of the equipment as well as certain other expenditures not encompassed within the main body of the construction and installation operations.

In the economic literature, therefore, statements have begun appearing more and more often to the effect that the concentration in the builders (contractors) of the functions of planners, outfitters, and production organizers will allow us to concentrate in one set of hands labor, material-technical, and financial resources; it will give us the opportunity to determine the existing reserves more correctly. Consequently, the price of a "construction output" commodity can be established either including or excluding the cost of the equipment, depending on who pays for the cost of the equipment.

It is another matter when we are talking about the inclusion of the equipment cost within the output volume of the construction sector. In this case too, it seems to us, there are no particular theoretical obstacles to combining the costs of the equipment obtained, delivered, and installed by the general contractor with the cost of his commodity output. There are certain practical inconveniences, which express themselves in the fact that there is a sharp increase of material expenditures in the construction and installation organizations. But this hindrance can be eliminated in making the transition to evaluating the activity of the construction and installation organizations by their normative, conventional-net output.

Quite a few disputed questions are connected with defining the composition of commodity construction output. The reason for this is the fact that, in essence, only the commodity output of the general contractor constitutes the fixed capital and production capacities actually prepared for operations, whereas the commodity construction output of specialized organizations comprises merely the intermediate complexes of certain types of construction and installation operations.

For a general contractor a mandatory condition for inclusion within the volume of commodity construction output is the possibility of utilizing the facility or complex of facilities being put into operation. This pertains to enterprises, their stages, start-up complexes, and individual facilities being put into operation, as well as projects of a temporary nature, the construction of which has been provided by the title list. The composition of commodity construction output does not include buildings and structures ready for use if they cannot function without other facilities which are still in the construction stage.

The output of the sub-contracting organizations performing special construction work and the installation of the main technical equipment comprises the finished complexes of the projects. However, this output is a commodity only for the indicated organizations and not for the construction sector as a whole. It should be noted, moreover, that in one group of sub-contracting organizations the completion of work complexes coincides in time with the concluding phase of construction. Here too there is no particular problem in resolving the question of when to include their output in the total output of commodity output. Matters are different with the output of the sub-contracting organizations when the time of completion of their work complexes does not coincide with the time for putting the facilities into operation. In accordance with the existing methodological statutes, these projects are included within the composition of commodity output to the extent of completion of

the entire complex of special operations on a facility or the enterprise under construction as a whole, regardless of the time of introducing the enterprise or facility into operation.

Proposals have frequently been made, however, to the effect that the moment of including such work in the composition of commodity output be delayed until the general contractor turns the start-up complex over for operation. In our opinion, the authors of these proposals have lost sight of the following, extremely essential circumstance: in case of a negligent attitude toward the task on the part of the general contractors, there would be an infringement upon the economic interests of the sub-contractors carrying out such work complexes, inasmuch as, when they had completed their own operations, either on time or ahead of time, they would not be able to include them in the volume of commodity output before the general contractor turns them over for use. Furthermore, under such a system the general contractor would not bear any responsibility for maintaining the projects completed by their co-performers. As a result, the sub-contractors are compelled to re-do the completed projects because of violations of construction technology by successive performers. After carrying out their own functions, the sub-contractors can neither influence the over-all course of a project's construction nor apply any sort of sanctions. But the general contractor does have such rights. All this cannot be called equal responsibility and equal motivation. Such a system of relations would inevitably undermine the elementary principles of cost-accounting activity in construction.

Taking this into account, certain authors have proposed that the cost of work complexes carried out by sub-contracting organizations and turned over by them to the general contractors be called conventional commodity construction output. In our view, there is not sufficient grounds for this, inasmuch as for the sub-contracting organizations the commodity nature of their output is not at all conventional but real, since it is being sold to another organization. However, it would still be more correct to distinguish the concept "commodity output of the contracting organizations" from the concept of "commodity construction output." The former should be defined as the cost of all work complexes carried out by any contracting organizations, completed and turned over to the client or the general contractor, including the costs of capital repairs and other types of contracting work. Only a complex of operations performed under the conditions of an internal sub-contract on a single production construction and installation association (trust) cannot be considered a commodity output, inasmuch as this output does not go beyond the bounds of activity of a basic cost-accounting unit of construction production. The concept of "commodity construction output" would encompass the cost only of enterprises, complexes, stages, and facilities turned over by a general contractor for operation. In our opinion, the above-indicated terms more accurately characterize the concepts and are more substantial than the presently accepted terms "volume of commodity construction output by enterprises and facilities to be turned over to clients" and "total volume of commodity construction output."

Evaluation of the economic activity of the construction and installation organizations by commodity construction output is directed at the most rapid

possible achievement of end results--the putting into operation of production capacities and fixed capital. However, these tasks should be carried out not at any price but achieved at high organizational-technical levels of construction production, a growth rate in labor productivity, and with the least possible outlays.

A gradual change is now being made to planning labor productivity within the construction and installation organizations in accordance with the normative conventional-net output, which includes, in contrast to net output, expenditures for the use of construction machinery and mechanisms, including their amortization.

It seems to us that the indicator of the normative conventional-net output could also be utilized for evaluating the dynamics of change in the volume of construction and installation work being carried out by the contracting construction organizations. The dynamics of change in the volume of work according to their estimated cost is far from flawless because of the influence of structural shifts. At the same time, many economic indicators, computed by proceeding from the volume of normative conventional-net output, characterize more precisely the results of an organization's economic activity.

Also meriting attention, in our view, is the question of the feasibility of calculating the indicators of the profitability level of the construction and installation organizations on the basis of normative conventional-net output. By analogy with the manufacturing sectors of industry, where the profitability by types of output is defined as the ratio of profit to production cost, deducting for the raw material, fuel, energy, materials, semi-finished goods, and sets of items used, in order to compute the profitability of construction and installation work, we could use the production cost minus the material outlays.

The normative conventional-net output as the cost-measuring yardstick of production volume must be acceptable for all the construction and installation organizations. So far this has not occurred. This is the case, in particular, because of the fact that the workers' basic wages, contained in the cost of loading and unloading operations, in the transportation expenditures for hauling materials, and in the cost of operations with regard to storing and preserving them, are not taken into account in determining the normative conventional-net output. In the material-consuming sectors of construction this leads to a considerable decrease in the magnitude of the normative conventional-net output.

Certain authors consider that it is utterly inadmissible to compute the normative conventional-net output without the portion of wages for loading and unloading operations and the transportation of materials, semi-finished goods, and other items, their storage and preservation, accounted for under the article entitled "materials," since, in their opinion, the total of these wages is close to the cost of amortizing the construction machinery and the energy resources required for their operation. We cannot agree with this conclusion, for such an equality is frequently violated. This may be seen from the data on the comparative magnitude of these expenditures for the construction and installation trusts carrying out material-intensive work, as cited in Table 1.

Table 1		
Trusts	Proportion of outlays under the article entitled "Materials," in the total outlays, %	Excess of the total wages included under the article "Materials" over expenditures for operating construction vehicles and machinery (one-time)
Nefteprovodmontazh	80.5	5.7
Salavatstroy	62.9	2.0
Yuzhursel'elektro-set'stroy	65.3	2.2
Bashsantekhmontazh	72.1	8.2
Bashelektromontazh	64.1	2.7
Bashspetstroy	60.5	2.1

As may be seen from these data, the wages included under the article entitled "Materials," as designated in Table 1 for trusts exceed by a factor of 2--8 the magnitude of outlays under the article entitled "Expenditures for operating construction vehicles and machinery." If, moreover, we take into account the fact that, in addition to wages, these organizations have reached considerable outlays for the operation of construction machinery and transport means, engaged in loading and unloading operations, procuring and hauling materials not accounted for in Table 1, then it will become clear that the use of the indicator of the normative conventional-net output would have a negative effect on the technical-economic indicators of the above-indicated construction and installation organizations.

And, in contrast, when the construction and installation organizations carry out machine-intensive work, the wages under the article entitled "Materials" would be significantly lower for them with regard to operating construction vehicles and machinery. Thus, for example, the data cited in Table 2 for contracting organizations carrying out material-intensive work testify to the fact that expenditures on the operation of construction vehicles and machinery exceed by a factor of 2--5 the wages under the article "Materials."

Table 2		
Trusts	Proportion of outlays for operation of construction vehicles and machinery in the total outlays, %	Excess of outlays for operation of construction vehicles and machinery over wages under the article "Materials" (one-time)
Bashspetsneftestroy	11.1	2.1
Kumertaustroy	11.7	2.5
Trust No 146	12.2	2.2
Beloretskmetallurgstroy	7.1	5.1

Table 2 (Continued)

Vostokneftezavodmontazh	9.3	2
Ufimdorstroy	13	2.6
Bashmeliovodstroy	35.9	2.1

Consequently, organizations carrying out machine-intensive types of work are under more advantageous conditions in utilizing the indicator of the normative conventional-net output.

Thus, in planning labor productivity as an indicator of the production volume, use of normative conventional-net output does not solve the problem of the diversity of probability of the individual types of work.

In our view, this gives us grounds for drawing the conclusion that it is feasible to include within the normative conventional-net output the workers' wages and the expenditures for operating construction vehicles and machinery engaged in loading and unloading operations and in transporting materials. The magnitude of the above-indicated outlays, in our opinion, can be determined with the aid of coefficients, based on an analogy with the method for computing indirect types of wages, accounted for as part of overhead and other kinds of expenditures.

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CONSTRUCTION PLANNING AND ECONOMICS

COORDINATION, IMPLEMENTATION OF BRIGADE-FLOW SYSTEM DISCUSSED

Moscow NA STROYKAKH ROSSII in Russian No 10, Oct 83 pp 22-23

[Article by Yu. Chikhachev, department chief of the Data Processing and Computer Center (IVTs) of the Trust Orgtekhstroy [not further identified] of the Vladimir Territorial Construction Administration (VTUS) of the USSR Ministry of Construction (Minstroy); O. Krifuks, IVTs specialist; and O. Krasavina, graduate student at the Leningrad Construction Engineering Institute (LISI): "Automation of Schedules for Work-Flow Organization of Construction and Installation Work"]

[Text] Experience of progressive construction organizations convincingly proves the advisability of transition to the round-the-clock work-flow brigade contract. USSR Gosstroy has issued recommendations on methods of organizing long-term contract work flows. The economic benefit from applying the long-term round-the-clock work-flow brigade contract in accordance with the recommendations is 26,900 rubles for 30,200 square meters of effective floor space.

Yet practical introduction of long-term round-the-clock work flows involves many difficulties. There is even a psychological barrier which has to be overcome so that all participants in the work flow strive not "for intermediate goals," but for "turnkey" delivery of projects. And there is also the requirement of a considerably higher level of balance among the effects of all the partial specialized work flows, in which a change in the structure of the plan as a rule necessitates a certain restructuring of the makeup of brigades, which can cause a temporary drop in output. In 2-year planning this need for restructuring arises at least once a year--when the organization of the work flow is being projected in the program of the next year (in view of the results of the previous year).

One of the essential reasons why the round-the-clock work-flow brigade contract has not spread as widely as it should is the poor engineering preparation of the construction process.

In the VTUS schedules for work-flow organization of construction and installation work have been prepared for a number of years as an adjunct to the next year's plan. But manual scheduling not only makes it difficult to adjust schedules in the course of operation, it also eliminates the practical

possibility of comparing alternatives. There is no question whatsoever of solving optimization problems.

Yet it is alternative calculations of the work-flow organization of operation, including the solving of a number of optimization problems (which in principle are not solved today) and examination of all the viable methods, which are necessary to full-fledged engineering preparation of the construction process.

Problems of this kind include determination of the most optimum breakdown of the entire set of operations into partial fronts; calculation in the round-the-clock work flow on the project of the most optimum (matched in intensity) combinations of operatives in the principal specialized partial work flows; selection of optimum sequences for inclusion of individual projects in the round-the-clock work flow and determination of the order in which the partial fronts of work (space modules) of various projects are to be assimilated. These problems can be solved only with maximum automation of the engineering preparation of production on the basis of the methods of mathematical economics and electronic computers.

The IVTs of the Orgtekhstroy Trust of VTUS undertook in 1982 to automate the project planning of the work-flow organization of operations in close contact with the Chair for the Organization of Planning and Management (OPiUS) of the Leningrad Construction Engineering Institute. A series of programs, some developed in the Chair of OPiUS LISI and others prepared in the IVTs of VTUS, to elaborate the theory of the work-flow organization of operations of Professor V. Afanas'yev, director of engineering sciences, are now in the stage of experimental operation on the YeS-1033 [unified system] in the IVTs.

Optimization with respect to the criterion of the time sequence of the construction of projects is of particular interest with respect to attaining high technical-and-economic indicators in organization of long-term round-the-clock project work flows. Search algorithms which have been given strict mathematical proof are used for this purpose to find the optimum sequences for assimilation of the partial work quantities for the various methods of work-flow organization of construction (carried out in the "Option" program). Solving this problem makes it possible to achieve a considerable intensification of the construction process, i.e., to reduce construction time (as much as 18-20 percent) without calling upon additional resources.

This reduction of construction time occurs because of optimum mutual linkage of the various types of work in time and space and a consequent reduction of idle time in work areas. But the terms of the algorithm are predicated on the possibility of assimilating the work fronts in any sequence. In practice, though, there are always a number of constraints governing the technically feasible sequences within the entire set of those which are theoretically possible.

Such constraints in construction of a housing development might, for example, be the transfer of existing utility mains and demolition of existing structures, the direction in which utility mains are to be laid (depending on

possible places where they can be cut into trunk lines), the direction earth is to be moved in connection with the vertical grading of the site, and so on. When an industrial complex is being built, the need to take into account the direction of the flow of production in the complex to be built should be added to the constraints enumerated above, and so on.

Constraints governing the sequence of construction of projects, which are inherent in any specific construction job, can be reckoned with by using the adjacency matrix of zeros and ones which is well known in the theory of graphs; it makes it possible to adopt formalized notation of the constraints which exist:

$D\{d_{1q}\}, 1 = 1, \dots, n; q = 1, \dots, n;$

in which n --number of projects.

The elements of the matrix formed for constraints satisfy the condition:

$d_{1q} = \begin{cases} 0, & \text{if it is not possible to move on to project } q \text{ from project } 1 \\ 1, & \text{if it is possible to move on from project } 1 \text{ to project } q \end{cases}$

Every line of the matrix shows the project to which the flow of work can move on from the project corresponding to the given line, and the column shows from which project the flow of work can move on to the project corresponding to that column.

An algorithm based on combined use of the method of directed sorting and the constraints matrix (adjacency matrix) has been developed in LISI to determine that sequence for assimilation of work fronts which is the most optimum with respect to time for the particular conditions of construction.

The possible directions (branching) are formed and the most promising of them selected so as to take into account the possibilities of the given direction in accordance with the adjacency matrix compiled previously.

This method of optimization of the work-flow organization of operations makes it possible to considerably reduce the volume of computations as compared to complete sorting and the method of directed sorting and also to find the sequences for assimilation of work fronts which afford the minimum possible duration of the entire set of operations possible for the specific conditions of construction. The algorithm was written in FORTRAN IV language in the program "Lisi."

As originally set up, the adjacency matrix made it possible to form only those sequences when determination of each subsequent work front depended on the last one ascertained. In the process of computations in the IVTs the possibility was created of determining subsequent fronts from the adjacency matrix so as to take into account all fronts previously determined (program "Organ").

Calculations made in IVTs in connection with these programs confirm their applicability to practical purposes. But situations are encountered when it is complicated for the adjacency matrix to describe all the diversity of constraints which the actual process imposes on the sequence of assimilation of work fronts. For such cases, and also when there is a need to conserve computer time in the IVTs, the program "Diagram" was developed in FORTRAN IV V OS YeS according to an algorithm for heuristic exploration of optimum sequences; that program prints out a table of the marginally possible minimum times (PVMP) for all possible sequence locations of each work front. Here the very values of the PVMP are determined in accordance with existing theory. The optimum sequence is manually searched on the printout.

The search takes 10-15 minutes when there are 50 work fronts. This eliminates the need for strict formalization of all existing constraints and their entire range can be taken into account. Thereafter the sequence chosen is read into the computer according to the program "Grafik" ["Schedule"] and the coordinates of the cyclical chart for the work-flow organization of operations according to the method that interests the project planner are printed out. If there are 50-60 partial work fronts, this computation on the YeS-1033 takes in all no more than 10 minutes of computer time. Comparison of the results of the calculations with the sequences obtained with the programs "Option," "Lisi" and "Organ" (i.e., with absolutely precise results) make it possible to speak of a sufficiently high degree of similarity of the heuristic algorithm.

Efforts are continuing in IVTs VTUS to include a number of optimization problems in calculations of the organization of construction with the round-the-clock work-flow brigade contract. This has its difficulties, without a doubt. For example, there is the lack of both nationwide classifiers of types of general construction operations as well as of codes for general building materials, which makes it more difficult to solve the problems of aggregate supply of work-flow construction. Then there is the painful problem of the low quality of project plans and estimates (from the standpoint of orientation toward obtaining the initial data for engineering preparation of production). Then there is the fact that both within the ministry and also in the nation as a whole there is not enough coordination of development projects in the field of automation of engineering preparation of production and of the ASU [computerized management system] as a whole.

But in spite of all the difficulties, the future belongs to a creatively developed round-the-clock work-flow brigade contract. Computer equipment and the ASUS [computerized system for management of construction] have no small role to play here. One of the ways of overcoming the difficulties which exist is to create sets of routines to optimize the organization of construction of long-term round-the-clock project work flows.

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AGRICULTURAL CONSTRUCTION

SINGLE-FAMILY DWELLINGS IMPROVE RURAL LIVING

Moscow STROITEL'NAYA GAZETA in Russian 2 Dec 83 p 1

[Article: "The Farmstead-Type House"]

[Text] The program of the social transformation of rural areas is being carried out in the country on a wide scale. The party and the government regard it as a component part of the USSR Food Program.

Over the period of the last 15 years the degree of providing kolkhoz members and sovkhoz workers with housing has increased from 7.4 to 13 square meters. The qualitative level of housing has also been changing. Apartments in multi-story, large buildings are being replaced by one- and two-family houses with farmstead sections for private, auxiliary farming. With regard to convenience of design and level of comfort, they are often just as good as urban-type apartments. Farmstead-type construction activity has been developing successfully in the rural areas of Belorussia, the Tatar ASSR, as well as in Moscow, Dnepropetrovsk, Saratovsk, Chita, and other oblasts.

In their letters to the newspaper readers have named farms where there is a constant concern for the everyday life of the rural inhabitants. At the Sovkhoz imeni Karl Marx, which is located in Tselinograd Oblast, Kazakhstan, six construction brigades have been created. There is a brick-yard in operation on this farm, the production of reed-type, pressboard panels has been set up, and the mining of sand and rubble-stone is being carried out. They are now erecting a cultural-sports complex. Initiative in solving the problems of social development has also been shown by the Kolkhoz imeni Sindryakov, Oktyabr'skiy Rayon, Tatar ASSR. During the current five-year plan more than 100 families have celebrated new housewarmings here.

The program of rural housing construction, as outlined by the May (1982) Plenum of the CPSU Central Committee, is being carried out everywhere. The decree adopted by the CPSU Central Committee and the USSR Council of Ministers, entitled "On Measures To Guarantee the Fulfillment of Plans to Build Houses and Facilities for Social and Everyday Life," has posed the task for USSR Gosstroy, Gosgrazhdanstroy, USSR Gosplan, as well as the construction ministries and departments, of developing and implementing during the years 1983--1985 specific measures with regard to reducing the cost of housing and civic construction, raising the level of industrialization, and providing savings on material and labor resources.

The facts and figures confirm how urgent this task is. In Kostroma Oblast in a Series-135, rural-type, one-family house the cost of a square meter of total area amounts to 350 rubles. This figure increases to 400 rubles in the Orlov region, where farmsteads are built using structural components of the urban Series-121. The outlays are still higher on the Meshcherskiy Sovkhoz, Ryazan Oblast, where the Muscovites erected three-story apartment houses using structural components and parts from the Standard Integrated Catalog.

In accordance with the decision of the May (1982) Plenum of the CPSU Central Committee, aid to the rural areas has assumed a more solid, material basis: a portion of the capacities of urban home-building combines has been switched over to rural orders, and the production of parts for erecting industrial-type farmstead buildings has been mastered. Now it is extremely important to concentrate the efforts of planners and scientists on improving their constructional and economic parameters. And, in particular, as has already been mentioned more than once by specialists in the pages of STROITEL'NAYA GAZETA, to achieve a substantial reduction of heat losses through the enclosing structural components, as well as to develop and introduce effective heating systems with an economical expenditure of fuel-and-energy resources.

With the mass conversion to farmstead construction, these problems have assumed an All-Union nature and require coordinated actions. At the recently held session of the Commission of the Presidium of the USSR Council of Ministers with regard to problems of the agro-industrial complex Gosgrazhdanstroy was indicted for insufficiently coordinating the activities of the Gosstroy institutes of the Union republics, the USSR ministries and departments, as well as for weak monitoring controls over the development of standardized apartment-house plans.

Gosgrazhdanstroy was entrusted with the task of paying particular attention to reducing construction costs, strengthening monitoring controls over the quality of the apartment houses and cultural-everyday-life facilities being put into operation.

Such an important assignment is closely interconnected with the preparation by USSR Gosstroy and the Councils of Ministers of the Union republics of capital-investment norms for the construction of apartment houses and facilities for communal services on kolkhozes and sovkhozes, taking into account the build-up of populated points by means of farmstead-type houses. The creation of such norms will allow us to improve the planning of capital investments, evaluate planning solutions more objectively, and correct the existing technical documentation more rapidly.

During the present five-year plan provisions have been made to erect a third of the housing by means of funds from the population and the housing-construction cooperatives. Every year in this country individual builders erect 150,000 houses. Their number could be incomparably more if matters were organized correctly. The readers G. Chepurina from the city of Pestovo, Novgorod Oblast, A. Andreyev from Vyaz'ma, and others write about their difficulties in obtaining credit, acquiring building materials, and their delivery, as well as the selection of a plan.

In order to increase the participation by working people in the transformation of the rural areas, the RSFSR Council of Ministers has examined the question of measures to improve the supplying of materials and products for the construction of individual dwellings. In 1984 the Ministry of Trade, Rospotrebsoyuz [RSFSR Union of Consumer Cooperatives], and the ispolkoms of the Soviets of People's Deputies at the sub-departmental lumber-trade centers and stores must guarantee the acceptance of orders from the population for materials and products, as well as for their delivery; the release of and delivery to the population of cement, slate, soft roofing, glass, radiators and heating convectors, ceramic tiles, and other products directly from the enterprises of the building-materials industry and local industry in accordance with the procedures of the trade organizations on the account of market funds.

Hundreds of standardized plans for farmstead-type housing have been created by architects and designers. But it is extremely complicated to find among them houses which are acceptable with regard to both cost and conveniences. There is a clearly marked trend for increasing the price of a farmstead. In the Design Bureau for Reinforced Concrete of RSFSR Gosstroy they have used reinforced-concrete verandas, frames, pediments, and cornices instead of wooden ones in industrial buildings of Series 25 and 135. As a result, their cost has risen by 5 percent. Outlays on Series 90 increase by 10 percent if the floor, attic, and foundation base are heated, and if a triple glazing of the windows is done. A situation must be achieved whereby the improvements, even the most necessary ones, to be made in the plans do not entail more expensive rural housing.

Conversion to the farmstead-type build-up requires a re-examination of many concepts, along with the development of the tactics and strategy for industrial-type construction in the rural areas. We ought to be more active in carrying out planning and engineering developments for expanding the scope of building up the rural areas with cultural and everyday-life buildings, made with items from the urban products list.

The organization of modern-day life in the rural areas depends, to a large extent, on how rapidly and effectively real work is completed with regard to creating farmstead-type housing which is convenient and accessible to the population with respect to cost. Not an apartment but one's own home in the village--that is today's formula for the necessary condition for retaining personnel in agricultural production.

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